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INDUSTRIALIZATION  
IN COUNTRIES AT THE EARLIEST  
STAGES OF DEVELOPMENT <sup>1/</sup>  
by  
Frank L. Turner

<sup>1/</sup> Mr. Turner is an Industrial Development Economist having experience in industrialization programmes in Cameroon, Colombia, Ecuador, Japan, Korea, Singapore, Sri Lanka, Peru, Thailand and Taiwan.

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INDUSTRIALIZATION IN COUNTRIES AT  
THE EARLIEST STAGES OF DEVELOPMENT

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SUMMARY

Symptoms of Underdevelopment

Countries just starting to develop display a number of common characteristics. For example, they have predominantly rural populations and low per capita GNP typically ranging from \$50 to \$90 (less than one twentieth of per capita GNP in Japan and less than one fortieth of per capita GNP in the United States). At current rates of slow growth, some of the least developed countries are falling further behind the advanced nations each year.

The manufacturing sector plus electric power contributes comparatively little to the total GNP of the least developed countries, about 10 to 15 percent, except in countries where there is a major expatriate-owned plant processing ores or agricultural products.

Public health programs in these countries are now preventing the outbreak of diseases of epidemic proportions, but low grade infections, dietary problems and the neglect of routine disabilities sap the energy of the labor force.

Electricity consumption may range from 60 to 100 kilowatt hours per inhabitant (as contrasted with 2338 kwh in Japan and over 6000 kwh per capita in the United States).

Newspaper readership, radio ownership, literacy, and the number of persons capable of speaking a common language are substantially below levels prevailing in advanced countries.

Manufactured goods are expensive in relation to the personal incomes of inhabitants.

Some symptoms of underdevelopment cannot be quantified but are nonetheless real; these include: conspicuous contrasts of wealth and poverty, inefficiency of institutions such as government services, police, medical facilities, teacher training, and credit services.

A range of disincentives adversely affect the will to work; these include enervating climates, unattended illness, overcrowded housing, long treks to work, and a lack of opportunities for entertainment.

The governments of these countries typically operate in an atmosphere of day-to-day crisis as they try to cope with sporadic peaks of pressures from constituents seeking to accelerate development. Meanwhile governments try to "buy time" for development programs by autocracy and suppression.

Causes of Underdevelopment

Underdevelopment can be attributed initially to such causes as low agricultural productivity, the lack of transportation and power, inadequacy of basic and vocational education, low standards of public health, and the ineffectiveness of leadership and government services.



As progress is made in the elimination of these basic causes of underdevelopment, a "second generation" of problems begins to emerge. These problems are in part the result of earlier progress because local expectations begin to rise and demands for improvement become more insistent. Capital formation, more stability of government, and a heightened desire to raise personal incomes spawns pressures for more improvements including industrialization.

At this secondary stage of development, countries find that further progress is still handicapped by a lack of leadership and a shortage of people who know how to get on with the job of development; there is also a shortage of institutions to help launch and finance industrial projects, and to educate businessmen in management and technology. There are also conditions which frustrate energetic would-be entrepreneurs.

### Strategies for Development

Governments of the least developed countries try to make the best use of their limited resources to satisfy competing claims. They face questions of balance in planning development programs as between (a) the earlier programs focussed on agriculture, transportation, electric power, health, education and government services, and (b) the new demands for added programs arising as consequence of progress thus far. As development momentum increases, one of the new and pressing demands is for programs of industrialization.

Governments cannot abandon or cut back on their commitment to the original basic programs of development. This means they must find added resources to finance a new program for industrialization. New resources can be found through contributions of capital from (a) the entrepreneurial few who are willing to invest their own money in new or expanded plants, (b) from increased government revenues, and (c) from foreign aid and technical cooperation.

### Policies for Industrialization

There are some basic policies that can retard or hasten industrialization. Some countries hope that industrialization can be used as tool to help in the solution of immediately pressing problems like the drift of populations to towns, the displacement of traditional craftsmen by industry, or the employment of jobless and transitory populations. Unfortunately policies that look to industry only as the solution to such problems are likely to hamper industrial growth and retard longer range development. After a few years, however, industry can indeed offer solutions to these problems. Meanwhile alternative policies may offer the best short-run solution to the problems of urban drift and unemployment, while industry can play a supporting role if carefully planned.

Governments are urged to avoid taking action where private initiative is already available to develop industry.

Positive policies toward industrialization include: cultivating entrepreneurial energy as a national asset, dignifying the status of small industry, providing a range of special incentives or techniques for small industry growth.

## Techniques for Industrialization

Five basic techniques are essential ingredients for the success of an industrialization program: (1) clear governmental policies regarding small industry and a specialized agency to execute such policies; (2) the providing of industrial advisory services to encourage entrepreneurs, to help in the solution of their management and technical problems, and to expedite the approval of actions needed to assure the creation of added industrial capacity; (3) establishment of a financing mechanism for supervised industrial loans linked to the technical assistance of an industrial advisory service; (4) providing for the training of labor in basic vocational skills; and (5) financing necessary physical infrastructure such as power, water and roads.

The larger market towns can provide the breeding ground for entrepreneurs if at least "artisan sheds" and technical assistance are provided to encourage the transition of energetic persons from small scale service industries into manufacturing.

Some of the developing African countries are not providing programs for industrial promotion, industrial financing, building of infrastructure, and vocational training for industry. Even in the case of countries where active programs are launched, the quality and extent of such programs is uneven.

## Absorbing Technical Help from Overseas

To better qualify for technical help from overseas to promote industry, the suggestion is made that developing countries provide: (a) a specialized government agency as a focal point for policy level contact; (b) that counterparts be trained within the country as well as by means of group training missions sent abroad on inspection visits; in this way a cadre of local industrial advisers can be trained to "speak the same language" as foreign counterparts; (c) that efforts be made to take advantage of technical cooperation within the country from expatriate manufacturing companies and banks and from embassies or consulates representing sources of technical cooperation; (d) that countries articulate their needs for technical cooperation by means of up-to-date, well researched and editorially presentable reports about the status of local industry and plans for the future; and (e) above all, that countries demonstrate, by means of clear-cut policies and well organized institutions, that they are ready to absorb technical and financial help from abroad.

## 1.0 SYMPTOMS OF EXTREME UNDERDEVELOPMENT

### 1.1 Quantifiable Symptoms

Countries which are just starting to develop usually share in common various characteristics. Some of these characteristics or symptoms of underdevelopment can be expressed in statistical terms and others, nonetheless real, can best be described in terms of impressions and attitudes.

#### 1.1.2 Predominance of Rural Population

If the countries of the world were classified by their current levels of development, countries having the lowest level of development would be found to have large rural populations and small urban populations. In the group of least developed countries, the rural populations constitute 80 to 90 percent or more of the total population, and the residual 10 to 20 percent of the inhabitants are typically clustered in port cities, market towns or in the centers of government administration.

#### 1.1.3 Composition of Exports

The same group of countries all earn some foreign exchange through the exports of their products: of these exports, 80 to 90% of the total often consist of a few agricultural products, uncut timber or unrefined minerals and the residual 10 to 20% of the exports consist of a few manufactured goods. However the "manufactured goods" are likely to be semi-processed agricultural products such as palm oil, coconut products, or dried peppers. The composition of exports reflects the fact that the bulk of the country's productive effort is directed toward agricultural output or extracting raw materials and a very little effort is directed toward manufacturing.

#### 1.1.4 Gross National Product

If the gross national product (GNP) of these countries were analyzed, the contribution of the manufacturing sector plus electric power might range from 10 to 15% of the total GNP. If a major expatriate-owned processing plant for cocoa, palm oil or timber for example, were located in the country, it is possible that the contribution of manufacturing including partial processing might contribute 20 to 30% of the GNP.

If the GNP of these countries were divided by the number of inhabitants, the per capita GNP would range from \$50 to \$90. (For example, in 1970 the per capita GNP in East Pakistan was about \$74; in 1964, the per capita GNP in West Cameroon was \$78; in the same year, the per capita GNP in East Cameroon was \$120.)

### 1.1.5 Tax Revenue and Capital Formation

In terms of national financial indicators, tax revenue to the government as a percentage of GNP is low in the least developed countries, 12% or less, except in cases where a highly productive expatriate-owned plantation or manufacturing plant is located in the country. Most of the inhabitants can barely produce what they need and only a few elite can produce more or earn more than is required for their mere subsistence. As a result there is very little capital formation and very little money available for investment. Less than 10% of national incomes are saved in countries at the lowest level of development.

The annual growth rate in per capita GNP is fractional because population growth has tended to outpace or nearly equal the growth in production; annual average increases in per capita GNP are typically 1.0 to 2.0%. It is ironical that the successes achieved by public health programs in recent decades have added to life expectancy so that the total number of inhabitants tends to rise nearly as fast as the value of production.

### 1.1.6 Public Health

In terms of criteria related to public health, infant mortality in the least developed countries is about 150 infants out of 1,000 live births and the number of children per household is high. About 80% of the population experience dietary deficiencies and many persons are afflicted with ailments which are not immediately fatal nor of epidemic proportions, but still sap energy from the labour force and cause rates of absenteeism that would be surprising in developed nations. Typically there is one physician per 10,000 inhabitants. For example the figure in West Cameroon in 1964 was 1 physician for 32,061 inhabitants, and 1 dentist for 500,000 inhabitants.

### 1.1.7 Electricity Consumption

In terms of electricity consumption, countries at the lowest end of the development spectrum, consume about 5 to 10 kilowatt hours per capita each year. In countries that have attained a higher stage of development, per capita power consumption ranges from 60 to 100 kwh. By contrast, the most highly developed countries are characterized by power consumption levels well in excess of 2,000 kwh per capita. In 1969, for example, the per capita power consumption in Japan was 2,338 kwh (240.1 billion kwh/ 102.7 million inhabitants = 2,338 kwh), and in the United States consumption was over 6,000 kwh per capita. In 1967, consumption in India was approaching 80 kwh and mainland China, 55 kwh.

No doubt the value of manufacturing production is rising in almost all countries regardless of the depressed level of development; but this increase in manufacturing is typically 3 to 5% each year as contrasted with increases in manufacturing output in the most highly developed countries running well over 10 or 15% each year, or faster than the growth of GNP.

### 1.1.8 Education and Informational Media

Measured by criteria related to educational attainments, the least developed countries typically have a low level of literacy, for example, 10 to 20% of the population are literate. Only 10 copies of newspapers are published each year for every 1,000 inhabitants. Only 20 to 40% of the people customarily speak the same language, and the residual 60 to 80% cannot communicate with each other except in a third language such as French, Spanish and English or variations of these languages such as the pidgen English commonly spoken in port cities of Asia 50 years ago. Despite the low cost of transistor radios, only 50 per 1,000 inhabitants own radios because the initial cost or the recurrent cost of batteries is beyond their financial reach.

### 1.1.9 Other Quantitative Comparisons

In a recent book regarding developing countries, the economic, political and social characteristics of 54 countries were analyzed and the countries were divided into two groups. One group of 29 countries was described as having the "lowest level of development" and the residual 25 countries were described as having a "high level of development". None of the 54 countries could be described as advanced, that is the European and North American countries were not included in the analysis. (The book referred to is entitled Society, Politics and Economic Development: A Quantitative Approach, written by Irma Adelman and Cynthia Taft Morris, and published by the Johns Hopkins Press, Baltimore, 1967.)

The group of 29 countries with the lowest level of development included: Afghanistan, Cambodia, Cameroon, Chad, Dahomey, Ethiopia, Gabon, Guinea, Ivory Coast, Kenya, Laos, Liberia, Lybia, Malagasy, Malawi, Morocco, Nepal, Niger, Nigeria, Senegal, Sierra Leone, Somali Republic, South Viet Nam, Sudan, Tanganyika, Uganda, Yemen, and Zambia.

The group of 25 countries described as having a "high level of development included: El Salvador, Peru, Colombia, United Arab Republic, Argentina, Israel, Japan, Uruguay, Brazil, Chile, Costa Rica, Dominican Republic, Jamaica, Mexico, Nicaragua, Panama, Paraguay, Trinidad, Venezuela, Greece, Turkey, Cyprus, Lebanon, South Korea, and the Republic China (Taiwan).

The authors of the book established 41 indicators or characteristics that could be quantified, and then proceeded to prepare statistical profiles of the countries to see how the two groups of countries compared. Some of these comparisons are tabulated below:

COMPARISON OF (A) COUNTRIES AT THE LOWEST LEVEL OF DEVELOPMENT  
WITH (B) COUNTRIES HAVING A 'HIGH LEVEL' OF DEVELOPMENT  
(SELECTED CHARACTERISTICS) -- 1950-1963 n/

<u>Characteristics</u>	<u>29 Countries Having the Lowest Level of Development</u>	<u>25 Countries Having a 'High Level' of Development</u>
Diversification of Exports	10% or less of total exports are manufactured goods	20-30% of total exports are manufactured goods
Urban Population	10 to 20%	30% or higher
Language Homogeneity	20 to 40% of population speak a common language	About 60% of population speak a common language
Literacy	15%	65%
Copies of Newspapers Published per 1,000 Inhabitants	10	80
Number of Radios Owned per 1,000 Inhabitants	50	90
Crude Fertility Rate	40 to 50 children per 1,000 inhabitants per year	30 children per 1,000 inhabitants per year
Percentage of School-age Population Actually Enrolled in Schools	15%	50%
Tax Revenue as a Percentage of Gross National Product	12%	15%
Ratio of Net Investment to National Income	less than 10%	16% or more
Growth in Per Capita Gross National Product (1951-1964)	1.0% to 2.0%	2 - 3% or more (over half have growth rates above 3%)
Consumption of Electric Power per Capita	10 kwh	60 to 100 kwh

**COMPARISON OF (A) COUNTRIES AT THE LOWEST LEVEL OF DEVELOPMENT  
WITH (B) COUNTRIES HAVING A HIGH LEVEL OF DEVELOPMENT  
(SELECTED CHARACTERISTICS) -- 1950-1963 a/ (cont'd)**

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<u>Characteristics</u>	<u>29 Countries Having the Lowest Level of Development</u>	<u>29 Countries Having a 'High Level' of Development</u>
Annual Growth in Output of Manufacturing	3%	7% (1950-63)
Organized Political Opposition to Government	Very few countries have legally recognized or effective opposition parties.	Almost all countries have legal opposition parties due to the rise of the middle class and labour unions, but about half the countries have had coups d'etat since 1950.

a/ Source: Adapted from Society, Politics and Economic Development: A Quantitative Approach, Irma Adelman and Cynthia Taft Morris, Johns Hopkins Press, Baltimore, 1967.

b/ Some characteristics cover time periods different from 1950-63.

### 1.1.10 High Cost of Manufactured Goods

In the least developed countries, machinery and capital are expensive and labor is cheap. This means that products manufactured by machine are usually expensive in relation to local labor costs. In other words, the wage earner does not have enough income to buy manufactured goods whereas in a developed country the wage earner can purchase manufactured products within his income.

An illustration of this situation was made in 1963 in Ecuador which was then just beginning to industrialise. In the port city of Guayaquil it was found that the average wage level for an unskilled workman was the equivalent of \$46.35 per month. This wage was not enough to enable the workman to purchase many of the manufactured products he and his family wanted. For example a median priced pair of leather shoes cost him \$3.75; a two-piece wool suit, \$24.00; a pair of blue jeans, \$2.00; a plain cotton blouse for his wife, \$2.00; and pair of cotton socks cost \$0.30.

At the above prices, the workman would pay 8% of his monthly income to buy a pair of leather shoes, 52% to buy the wool suit, 4% to buy blue jeans, 4% to buy the cotton blouse, and 1% to buy a pair of socks.

A similar comparison was made of the purchasing power of an unskilled workman in California in the United States. The monthly wages in California were of course almost 10 times higher, about \$450 per month in California as contrasted with \$46.35 Guayaquil. Also prices were substantially higher in California. However, the California workman by spending the same percentage of his wages as the Guayaquil worker could buy 3 times as many shoes, 4 times as many wool suits, 6 times as many blue jeans, 7 times as many blouses, and 6 times as many cotton socks.

Expressed in other terms, if the California workman had to pay as high a percentage of his income as the Guayaquil workman for the same products, the California workman would pay \$36 instead of an actual price of \$13 for leather shoes; \$233 for a two-piece wool suit instead of \$55; \$19 instead of \$3 for blue jeans; \$19 instead of \$3 for his wife's blouse, and \$3 instead of \$.67 for a pair of cotton socks.

In the typical developing country the average wage earner either has to pay a formidably high percentage of his income for manufactured goods or more probably must go without many products he would like to have.

## 1.2 Symptoms that Cannot be Quantified

Countries having the lowest level of development have certain symptoms or characteristics which often cannot be expressed in statistics, but are nevertheless real and readily apparent.

### 1.2.1 Contrasts of Wealth and Poverty

These countries are characterized by conspicuous contrasts of wealth and poverty, of advanced technology and primitive methods, of highly educated urban minorities and illiterate farmers. They have substantial reinforced concrete or steel frame buildings in the capital cities or major seaports contrasting with rural huts made of grass, sticks and mud. Even in the least developed nations, there are some efficient high powered trucks and jet aircraft operating in areas where man is still the principal beast of burden. There are regions where barter economies still predominate in contrast to the modern banking institutions in the larger towns.

In countries like Liberia, Cameroon, Nigeria, Zambia there are expatriate-owned and operated manufacturing plants with high productivity and modern equipment. In contrast, there are native-owned small factories making furniture, ceramics, medicines, clothing, shoes or food products by primitive, labor-intensive methods.

Often these native factories are located in homes and the work force consists of only two to six persons who are members of the proprietor's family or his relatives. The products of native industry lack uniformity



in quality and design; the rate of output is slow, and delivery schedules are uncertain. The proprietor may be able to read, write and perform basic accounting calculations, but often he does not know his real costs nor can he conduct written correspondence with large buyers or banks in other localities. He would like to use more and better machinery but cannot raise the necessary capital, and even if he could, he is not sure enough of his marketing to be confident about repaying loans.

### 1.2.2 Ineffectiveness of Institutions

In almost all of the least developed countries, some progress has been made in establishing modern institutions such as banking systems, secondary schools, vocational or trade schools, a national tax administration, police and defense forces, a few hospitals, postal service, or statistical services.

However the newness of these institutions or the presence of inexperienced or untrained officers raises doubts as to their value in the minds of inhabitants. From these doubts flows distrust of the institutions, and an incentive to evade or to "outsmart" the institutions. In retaliation, the institutions adversely affect their own efficiency and handicap the people they serve with a needless excess of procedural rituals. Distrustful of the institutions and the regulations and laws which support them, people tend to place confidence only in individuals of proven ability rather than in the institutions. The loss of such an individual leader, while serious everywhere, is especially disruptive in these countries. Fortified by a sense of personal importance, individual leaders come to believe they can indulge in petty corruption and intensify their autocracy as a legitimate means of attaining national goals.

### 1.2.3 Perverting Climates

Many countries having the lowest level of development are located in tropical climates, that is in the zone between 23°27' North latitude and the same latitude in the southern hemisphere (Tropics of Cancer and Capricorn). In general the pace of living and the ability to survive in these regions has been easier than in temperate zones because of the warm climate and the extended growing season. By contrast, the people of temperate zones have historically learned to cope with cold climates and short growing seasons and through generations of experience have been forced to protect themselves from the environment or perish.

From a tradition of more leisure and easier survival in tropical zones, the least developed countries are now trying to work more quickly and to cope with exacting modern problems requiring science and personal energy and discipline. Their traditions have not prepared them for this challenging task.

#### 1.2.4 Other Disincentives to work

In the least developed countries there are a range of disincentives which impede man's ability to work at peak levels of efficiency.

Some of these disincentives stem from climate as mentioned. Other physical disincentives stem from problems of health such as the prevalence of low calory or low protein diets, hernias, malaria, intestinal obstructions, child birth complications, or skin infections. These health problems rarely cause immediate death but they sap vitality.

Housing is overcrowded, unsanitary, inadequately weatherproofed, and physically insecure from animal and human intruders -- these factors adversely affect rest, study habits and peace of mind.

Mud or dust impair household and personal cleanliness and reduce the sense of dignity that comes with a neat and orderly manner of living. Long treks to markets or to places of work or commuting in overcrowded buses lessen the will to work.

In combination these physical inconveniences contribute to absenteeism and a lack of punctuality. Worse yet, these disincentives seem to provide a justification for people to fail in performing routine tasks and to fall short of reaching high levels of craftsmanship or professional skill. These disincentives also provide a "reason" for non-payment of debts or for dishonest behavior.

There are psychological disincentives to work as well. In rural areas especially there is a lack of recreational opportunities -- very few radios, cinemas, newspapers, or books, no shops with bright lights and attractive merchandise. These shortages give rise to a craving for entertainment, cause migrations to cities, and make some people wonder, "why work harder if there is so little to buy and to enjoy with my earnings?"

There is a feeling of jealousy and sometimes contempt for the man who enjoys material gains. Some men are afraid to better themselves and think, "why should I produce more, or build a better house or have a radio only to benefit my relatives or expose myself to theft?" Sometimes deliberate mediocrity in living standards is the safest policy, "If I seem to prosper more than others I will be taxed or forced to share."

In the least developed countries there are many impediments to the routine conduct of business both government and private. It is often impossible to discuss arrangements by telephone, to travel, to see a customer, to transport goods from an area of surplus to an area of shortage, to store perishables such as fish, meat, eggs or fruit and thereby have a reserve available during seasons of shortages.

The people have no tradition which helps them to understand the use or maintenance of machinery. This lack of a mechanical aptitudes gives rise to impatience on the part of expatriates sometimes revealed by the comment, "Don't let the natives touch the machinery; they'll ruin it."

Services and goods which are capital intensive are scarce and expensive. This means that clothing, shelter and transportation are generally available only in the form of products and services which can be provided by human effort alone without the aid of machinery. This puts man at the mercy of nature and forces him to forego material and cultural advantages that can come from higher productivity through the use of machinery.

#### 1.2.5 Impossible Demands on Governments

None of the least developed countries lives incommunicado from the outside world. Therefore people are aware of better conditions elsewhere. They are restlessly seeking to elevate their standards hoping to have more roads, bridges, clinics, schools, lower school fees, better opportunities for recreation, more material comforts, higher income and more hope for the future.

Because there are so few opportunities for personal self betterment and because the individual feels helpless, citizens tend to look only to their governments for improvements giving rise to the attitude, "The Government could do something if only it would."

Thus the aspirations of inhabitants combine to mount impossible demands on Government to provide for the needs of today and to improve future conditions.

The governments in the least developed countries are hard-pressed to cope with these pent-up demands from their citizenry. Governments cannot solve all problems at once and therefore incipient unrest keeps breaking out to create an atmosphere of day-to-day crisis in national capitals. This unrest breeds conditions where demagogues find a ready hearing when they promise to do more for the people than the government in power. To maintain public order, governments are driven to autocracy in the hope of borrowing time while they try to bring about the changes that can free their countries from the circumstances of extreme underdevelopment.

## 2.0 CAUSES OF UNDERDEVELOPMENT

### 2.1 Primary and Secondary Stages of Underdevelopment

The causes of underdevelopment are different at different stages. These stages might be called the primary and secondary stage of underdevelopment.

To better define these stages for discussion purposes, the primary stage is the stage at which countries have begun to identify their developmental priorities and have made a start toward: (1) agricultural productivity improvements, (2) constructing transportation and communications links at least between major towns, (3) providing electric power at least in capitals and market centers, (4) starting primary, secondary schools, vocational schools, and teacher training, (5) reducing the incidence of disease from epidemic proportions to sporadic, but still controllable, outbreaks, and (6) establishing government buildings and services and public works.

At the secondary stage, countries may have worked for about ten years as independent nations toward the above six objectives and have made some progress, but are beginning to encounter a different series of problems that might be called second generation problems; that is, capital formation has begun to occur and more enterprising citizens, although only a few are showing capabilities for starting productive enterprises. There is an increasing number of younger people trained in vocational skills and more of the leadership group have been educated abroad. At the same time there is an intensification of demands for more and more improvements in the six primary fields of agriculture, transportation, electric power, education, health, and government services.

There are visible improvements in the government administration and a stabilization of laws, regulations and institutions. There is often a rising interest on the part of outside investors to participate in the development of natural resources or to invest in manufacturing enterprises.

### 2.2 Causes of Underdevelopment at the Primary Stage

Almost all the world's developing nations have begun to emerge from the primary stage of development, thanks to the determined efforts of independent national governments, to external sources of aid, to the momentum of programs started prior to independence, and thanks to the support of populations who have welcomed these improvements.

None of the developing countries can claim to have entirely emerged from the primary stage of development, but at least a start has been made. Contrasted with the early 1900's there are today some rail and highway systems, some improvements in farm productivity, the beginnings of educational systems at least in towns, the electrification of larger cities, and singular success has been attained in arresting diseases of epidemic proportions that once threatened entire communities.

The basic cause of underdevelopment at the primary stage is a lack of knowledge of the processes and techniques of development on the part of most of the inhabitants. In other words, there are not enough people who possess the knowledge, skill, and leadership to start up and perpetuate the developmental process.

Even where there are a few people with the capability of starting and maintaining development momentum, these few are handicapped by a shortage of essential tools and facilities which they need for their task. This means that a shortage of institutions, facilities and commercial traditions is the basic cause of underdevelopment. For example, without agricultural extension services and strong marketing incentives, there can be little improvement in seeds, soil nutrition, or irrigation and the income of farmers cannot rise to the point where they can purchase industrial goods. Without transportation, it is difficult to create markets or to conduct commerce; without electric power, it is impossible to modernize industry; without education, better housing, and health services, it is difficult to create a productive and reliable labor force. There is, of course, a shortage of capital needed to accelerate the developmental process.

The few people in a position of leadership are handicapped by their inability to work steadily and with concentration on the development problems at hand. Recurrent demands for improvement manifest themselves in peaks of pressure on leaders that become harmful to the continuance of political control and to the orderly execution of developmental programs. An atmosphere of stopping, revaluing, restarting, and chronic uncertainty prevails as the populations of developing countries grope for a solution, usually a quick solution, to their daily problems and hopes for the future.

### 2.3 Causes of Underdevelopment at the Secondary Stage

As the six basic causes at the primary stage are removed, countries enter the secondary stage. A new cycle of problems emerges and yesterday's solutions become today's problems. A surplus of goods over the needs of bare subsistence begins to be enjoyed by certain individuals or certain communities, that is capital formation has begun to occur. A productive channel and institutions must be then created for this capital. The failure to provide such a channel and to encourage even more capital formation is one cause of underdevelopment at the secondary stage.

Other causes for underdevelopment at the secondary stage are the lack of policies to cope with: (a) a shortage of trained manpower stemming from a shortage of institutions especially for vocational or managerial training; (b) inadequate savings and lendings arrangements for mobilizing and using domestic savings and for attracting resources from abroad; (c) inattention to the need for incentives to start productive enterprises through tax legislation, lowered duties on raw materials, technical guidance, research and financial assistance; (d) a lack of encouragement to the few leading individuals who are energetic and qualified to establish or expand manufacturing plants or service industries; these are the entrepreneurial elite who can accelerate the process

of further capital formation, create new job opportunities and bring to local markets the goods and services that the people want; and (e) failure to press ahead with still further improvements in the six basic problems still lingering from the primary development stage, that is agriculture, transportation, power, education, health and government services.

Underlying the above causes of continuing underdevelopment is the lack of political stability and the fear of individuals that the gains they may achieve through hard work and skillful management may be jeopardized.

### 3.0 STRATEGY FOR DEVELOPMENT

At the primary stages of development, most countries in recent years have decided to stress investment in: agriculture; transportation and communications; electric power; social capital, that is education and health; government services and public works, and to a moderate degree in industry and mining. A sample of the typical distribution of investment emphasis in early developmental programs is shown in Table 1. This table indicates the comparative stress given by the IERD to different sectors as measured by the amount of investment at the earliest stages of development in Nicaragua, Colombia, Surinam, Iraq, Ceylon, Nigeria, India, Pakistan, Indonesia (and by one development program recommended for West Cameroon by Stanford Research Institute).

It is clear that the predominant emphasis was placed in these early programs on agriculture, transportation, social capital and electric power. Comparatively little stress was placed on industry.

Later development programs in these same countries, however, have increasingly stressed industry and mining. In fact, the major emphasis in investment for development in most countries typically shifts to industry as soon as possible. This is because of such reasons as:

- (a) In terms of national economic growth, investments in industry typically yield the largest and most rapid return; expressed in more technical terms, the value added which can result from investment in industry is usually higher and more rapidly attained than the same investment in agriculture or in some other sector. In the West Cameroon for example, 1 unit of investment in agriculture was estimated to result in .45 units of value added. By contrast, 1 unit of investment in small industry was expected to result in 0.84 units of value added or nearly twice as much. Other examples from various countries show that the value added from one unit of investment in industry varies widely but tends to be high; in New Zealand it was 1.14 in 1959/60; in Pakistan in 1950 it was 1.07; in Japan, 1.8 in 1957.
- (b) Industry, even though small in scale, is more efficient than the traditional manual methods of raw material processing.
- (c) Industrialization can contribute to capital formation, to a later geographical dispersal of cities, to the creation of a managerial class, to the conservation of foreign exchange, to potential exports, to government revenues, and industry can potentially supply the inhabitants with goods at lower prices.

With these advantages, countries can add thrust to their developmental effort by investing more and more in industry. But before succumbing to the temptation of launching an industrialization program, they need to ask themselves the

TABLE I

COMPARATIVE EMPHASIS GIVEN TO VARIOUS SECTORS IN PUBLIC INVESTMENT PROGRAMS RECOMMENDED BY IBRD FOR COUNTRIES IN PRIMARY STAGES OF DEVELOPMENT -- EARLY 1950's

(Unit: Percentages)

	(1) Nicaragua	(2) Colombia	(3) Surinam	(4) Iraq	(5) Ceylon	(6) Nigeria	(7) India	(8) Pakistan	(9) Indonesia	(10) West a/ Cameroon	Average of figures shown
I. Agriculture and Irrigation	36	11	53	37	25	18	33	43	38	43 e/	34
II. Transportation and Communications	32	42	16	18	26	46	24	20	25	41	29
III. Public Works and Power	6	20	-	15	19	12	11	-	-	-	14
IV. Housing and Construction, Health, Education	22	18	25	7	24	21	23	21	12 c/	7	18
V. Industry and Mining	5	-	3	22	5	-	7	13	25	9 f/	11
Misc.	-	-	3	1	1	3	2	4	-	-	2
Total	101 d/	101 d/	100	100	100	100	100	101 d/	100	100	-

a/ Sources: For columns 1 through 9, Kindelberger, Charles P., Economic Development, 1958; figures are for early 1950's.

b/ For column 10, figures are from Stanford Research Institute, The Economic Potential of West Cameroon, 1965 (unpublished).

c/ Omits health.

d/ Does not add because of rounding.

e/ Includes some agricultural product processing.

f/ Includes some power investment.



question, "Are we ready for industrialization?" In other words have the countries at early stages of development progressed far enough to take on the risk of investing in a program of industrialization?

To answer this question, Dr. Gene Staley (Modern Small Industry for Developing Countries (Chapter 12, page 322-34)) provided the following check list of environmental factors conducive to success in a program of industrialization. If these factors are present in a developing country at least in a substantial way, then a country is ready to embark on a program of industrialization; Dr. Staley's check list is paraphrased as follows:

1. Is there general confidence in the Government and its ability to enforce laws and to provide reasonable progress in education, health, transportation, agriculture and other services?
2. Is there an expanding market for the products of industry?
3. Is there a labor force sufficiently skilled or adaptable to meet the needs of industry?
4. Are their natural resources or other raw materials available to meet industrial needs?
5. Is there adequate power and water and are there sufficient banking, postal, wholesale and retail distribution services?
6. Are the laws and regulations adequate to safeguard the fruits of labor and management skill?

If the answer to these questions is affirmative at least in the economically important regions the country, then clearly, the risk of investing in industry is a prudent one that should be taken.

### 3.1 Balance between Investment in Industry and Other Programs

The question then arises as to what is the correct balance between investment in industry and in other sectors? The basic programs already started during the primary stage of development cannot be abandoned nor neglected. On the contrary continuing improvements and usually expansions of the earlier programs are necessary.

Given however the finite nature of national resources, the question is how much should a country invest in (a) the six basic programs for development (mentioned in part 2.1 of this report), and (b) a new program of industrial development?

Because industrialization brings such obvious benefits to an economy, a simple answer is, "the more the better", but subject, however to some important restraints. The first restraint is imposed by the necessity of continuing and slowly expanding the six basic programs. In short a country cannot run before it walks. Another basic restraint is to start on a modest scale and to limit industrial development to levels of investment that can be absorbed.

The answer as to how much should be invested in industry vs. other programs cannot be answered in a clean-cut, definitive way, but some guidelines are suggested as follows:

1. Even in the least developed countries there are some entrepreneurs willing to invest in industry because by definition industry is usually capital intensive and tends to be profitable. Therefore a certain amount of local investment will automatically seek an outlet in manufacturing or service industries. This local private investment can reduce the costs of investment from government funds.
2. Public funds are still needed, however, to stimulate and guide the flow of private capital into industry by various devices such as industrial loans through guaranteed government credit to lending banks, technical advisory services, market research, training of managers, and the creation of certain infrastructure such as industrial estates, parks or zones. (These are discussed later in part 5.0.)
3. The upper limit of the financing requirement should be based on what volume of industrial investment the country can absorb in a given period of years. In other words, a good judgement based on a careful survey is required for each economically important region as to: (a) the number of potentially effective entrepreneurs there are in the country, (b) the number and size of plants they can reasonably expand or establish, (c) the demand for specific products or services that can be made or provided locally, and (d) the expectations of success or failure in expanding or establishing viable new plants. Such an industrial financing program is evolutionary and an initial program, however well conceived, should be periodically revised.
4. The upper limit of investment in industry should then be reduced by the amounts which can be reasonably expected from private businessmen seeking to expand or start industries, or from foreign aid and possibly from commercial banks. The residual investment for an industry program could then be decided as the capital requirement from public funds needed to finance an industry program.

Reduced to a series of steps, the above suggestions for estimating the capital needs to finance industrial development are as follows in part 3.2.

### 3.2 Suggested Sequence of Steps to Arrive at The Cost of an Industrial Development Program

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The following suggested steps are based on the time sequence of performance. That is Step A, the starting of technical advisory and research services, would be the first action to be considered.

**Step A:** The establishment of a technical advisory service, a marketing research service, and the training of potential managers, all or at least a pilot basis, plus the organization of an industrial financing mechanism. These catalytic measures are discussed in greater detail in part 5.0 of this report.

The costs implicit in this Step A would be small in contrast to other developmental programs and would logically be the upper limit of government investment in an industry program for one or two year period in countries which are just beginning to develop. The subsequent costs of an industry program could be arrived at through other steps suggested as B through F below.

- Step B:** Determine the number of and preferably the identity of potential entrepreneurs in each major town. (Usually these would be the few people who are already in business, possibly as traders, managers of transport services, contractors, loggers, importers, or promising graduates of technical schools.)
- Step C:** Determine what types of industrial enterprises potential entrepreneurs want to establish or expand; i.e. do they want to manufacture furniture, ceramics, leather goods, textiles; do they want to start printing establishments, bakeries, rice mills, oil mills, flour mills, saw mills, repair services for electrical goods, or diesel injection pumps, passenger cars, or sewing machines? Do they want to market their products and services in the local community, on a nation-wide scale, or export?
- Step D:** Determine if there is enough of a demand for the products and services identified under C, locally, nationally or in export markets to enable the Step C enterprises to operate viably? (Step D is a screening process to eliminate capacity that is clearly excessive.)
- Step E:** Determine what types of plants and of what capacity are needed in the country but have not been suggested by the local entrepreneurial community. This is a research task based on an analysis of what goods are now imported and which could be made locally plus an analysis of service industry requirements.
- Step F:** Determine the capital requirements for establishing the enterprises decided under Steps D and E. This involves research and a technical appraisal of the costs of imported machinery (foreign exchange), the cost of buildings, and the needs for working capital, often enough working capital to assure three months of start-up operations.

Step G: Estimate what is likely to be the attrition in entrepreneurs, that is how many enterprises under Steps D and E would fail to materialize.

Step H: Determine the priorities, that is what should be started first? a series of saw mills, or furniture shops? automobile repair shops? a knitting mill? a ceramics plant? a cold storage plant? or leather goods processing plants? This priority list should indicate what plants should be started in the first, second, or third year, and what should be postponed.

Step I: Determine the capital needed for plants implicit under Step H less the attrition estimated under Step G.

Step J: In most countries certain infrastructure is needed to launch industrial development, that is industrial estates or zones, power generation and distribution, water supply, and access roads. This is a necessary governmental expense prerequisite to starting industry. But this expense for infrastructure should be calculated on the basis of conclusions under the foregoing Step I above, and not based on wishful thinking or a desire to force a dispersal of industry into areas where entrepreneurs are few and markets small.

The accomplishment of Steps A through J enables a newly developing country to calculate the general magnitude of costs of an industrialization program. The costs of Step A (technical services) and Step J (infrastructure) are basic to the costs of an industrialization program.

The amounts to be invested under Steps A and J depend on the objective findings of the other Steps B through I and depend on a policy decision as to what additional amounts specifically for industry should be added to the on-going developmental budget. If a country starts on a small scale, which is recommendable, the initial costs of Steps A and J should be modest covering for example a nucleus advisory and research group of 5, 10 or 20 officers plus the capital costs of an industrial zone or estate with appropriate access to power, water and transportation.

Beyond the costs of Steps A and J, the capital requirement for new industrial capacity can become a major cost but some variables may reduce this cost to the country as outlined in further successive steps below:

Step K: In almost any country there are a certain number of persons with entrepreneurial skills as mentioned. Many of these persons can judge how much money they are willing to invest or able to obtain from friends and relatives for an investment in industry. Of the total capital costs estimated under Steps B through I, an estimate is needed as to how much capital is likely to be available spontaneously from the entrepreneurial community. In the case of some plants, the amount of private capital might be as high as 100%, but in most cases, the entrepreneurs would be able or willing to invest much less, for example 60%, 30% or 20%.

The amount of capital not financeable by the entrepreneurs themselves for the first year's specific list of priority projects (see above Step H) could be taken as an estimate for the capital needed in the first year to finance new or expanded industry.

Step L: Depending on the circumstances of the country concerned, the capital requirement under Step K might be further reduced if private banking institutions and foreign aid sources are willing to provide some of the capital. Specific assumptions on these amounts should be made under this step to arrive at a final estimate of the capital required to launch an industrialization program.

In summary the costs to governments for an industrial development program in the first and second year would probably be limited the cost of Step A, the establishment of services for advice, research, training and financing. Costs in the second or third year would probably be limited to a continuation of costs in Step A plus the cost of establishing minimum infrastructure in Step J.

The costs to governments in the third or fourth year would include a continuation of costs directly associated with Steps A and J plus the capital required to establish or expand the highest priority industrial plants. The latter cost would be reduced, however, by the amounts that businessmen themselves would be prepared to invest and the amounts that commercial banking institutions or foreign aid agencies would be prepared to underwrite.

After financing Steps A and J, the costs of an industry program would rise or fall depending on the nature of a policy decision of the government concerned. The government could decide to provide the capital for only a few or for many of the plants identified as having priority under Steps H and I listed above.

It is recommended that the original six development objectives (see part 2.0) of the primary stage should not be neglected. They should definitely be continued during the industrialization stages of development. However, an industry program should increasingly become a claimant for national resources both in terms of private and public contributions. If this cannot be done, countries have such options as: seeking more external sources of financing, or of increasing their government revenues, or of deferring the advantages of industrialization to later years.

There is danger of going too far and programming too much for industry as a result of unwarranted optimism regarding the ability of private entrepreneurs to come forward. There is also a danger on the part of governmental authorities to be overly reluctant in committing public funds needed to finance industrial promotional activities, Step A, and the industrial infrastructure as cited in Step J.

Rural market towns can become potential grounds for small service industries which over time can ease a transition to rural manufacturing. Experience suggests that in general a small industry policy should seek to disperse to rural areas only those industries which convert heavy or bulky raw materials to lighter weight and more concentrated forms. The economics of location and transportation costs will favor the dispersal of such industries as rice mills, saw mills, wool kilns, dairy products, tanning, canning of fruits and vegetables, the manufacture of textile boards, the beneficiation of ores, the manufacture of cement, and possibly the assembly of agricultural implements if there is a substantial concentration of rural customers.

In some countries, attempts have been made to force industrialization into rural areas in response to political pressures and a desire to arrest the movement of people from rural to urban areas. In one such country, a Government policy was adopted to 'build an industrial estate in every district': this policy resulted in the costly establishment of 12 industrial estates, 12 of which have remained empty or seriously underutilized for a period of eight years since their establishment. There were many reasons for the non-utilization of the 12 estates, but basically there was not enough local purchasing power to support the kinds of industry originally contemplated and the estates were never occupied. The industries originally planned were for the production of consumer goods such as metal fixtures, electrical goods, garments, plastic utensils, foundries for casting spare parts, footwear, textiles.

In the same country, however, plants were successfully established in rural areas to process fruits and vegetables, to mill rice, to store perishables, and to make dairy products. These rurally located plants have served the dual purpose of meeting demand and of stimulating local farmers to grow cash crops. In general the local farmers had previously produced only paddy rice and vegetables, but the availability of fruit canneries and a cold storage plant stimulated the production of berries for jam and potatoes for cold storage. There are three distinct growing seasons in the country referred to and local farmers had typically allowed their lands to remain fallow during one of the growing seasons. The development of near-by factories offered farmers an incentive to cultivate crops or fruits during all three growing seasons.

In remote islands of the Ryukyu chain, pineapple canneries and sugar mills were sited in the center of farming areas and resulted in unprecedented productivity and prosperity among the farming community.

Other types of industries which add to the weight or bulk of raw materials, which serve large numbers of consumers, or which perform a service are more likely to be viable if located in towns and cities. (See Annex II to UNIDO paper listed in Appendix A, Item No. P-4 for further information on types of industry suitable for dispersed, i.e. non-centralized location. This listing is reproduced in this report as Appendix F.)

To arrest the urban drift, non-industrial policies such as improvements in agricultural productivity, rural health, education, opportunities for entertainment and recreation, the dispersal of retail stores, and better transportation are possibilities to consider.

## 4.0 POLICIES FOR ENCOURAGING THE GROWTH OF INDIGENOUS INDUSTRIES

This chapter deals with the basic conditions and policy framework that are conducive to the rise of indigenous industry. In most countries that are just beginning to industrialize, a contrast can be seen between (a) capital intensive, large-scale, technologically advanced sometimes expatriate-owned plants, and (b) indigenous industry. As mentioned, the indigenous or native industry is usually characterized by small scale, labor intensive, primitive plants handicapped by low productivity.

The comments here relate to native industry and offer suggestions as to policies whereby this type of industry can be strengthened so that over time a local industrial base will emerge.

Parts 4.1 through 4.4 immediately below suggest that a small industry policy may not be fully successful in trying to solve three typical problems that are a cause for anxiety in newly developing countries. These three problems are the drift of population to towns, the perpetuation of traditional crafts for utilitarian products, and the immediate alleviation of unemployment.

Parts 4.5 through 4.10 discuss objectives that are more relevant to a small industry policy.

### 4.1 Industrial Policy and Urban Drift

The drift of population to cities in most industrializing countries has caused distress in recent years. The young farmer who travels to a city usually ceases to be employed as soon as he leaves the farm, and quite often joins the ranks of the officially classified unemployed the moment he arrives in the city. This unemployment brings with it the attendant problems of congestion, housing shortages, a lack of water and sanitation, and the implicit threat of political disturbance.

The movement of populations toward cities would seem to justify a policy of decentralizing industry as a technique for reversing the flow of people. Unfortunately urban drift creates a serious dilemma with respect to industrial location. On the one hand, it is economically proven that certain types of industry prosper where markets exist and therefore most industry throughout the world tends to concentrate in towns and cities. It is equally true that such a concentration accelerates the urban drift and further aggravates the unemployment problem.

Nevertheless there are definitely certain types of industries that logically should be sited in rural areas. If development policies encourage such industries in rural areas the dual objective of industrialization plus a retarding influence on urban migration can be furthered. Some suggestions for a policy of locating industry in rural areas can be found by analyzing the

types of industries that historically have been found to be economical in rural areas. Also an evaluation of experience in countries like Zambia, for example, where rural industry is being deliberately fostered would be useful.

#### 4.2 Industrialization and Traditional Crafts

In almost all countries there is a traditional handicraft industry based largely on manual processes in the home and aimed at the production of artistic or ornamental goods. These industries have a useful role as suppliers of goods for tourists or for export. In some countries, there are also traditional industries which produce utilitarian articles for mass consumption but by primitive manual methods.

In general, these traditional industries require special treatment outside the scope of a small industry policy. This is because the value of artistic and ornamental products is often their manual input -- the antithesis of mechanized industrial processes. Special treatment is also required for individuals engaged in native industry for the production of utilitarian goods such as hand-woven cloth. This is because these individuals pose a social rather than an industrial problem. There is no doubt that the hand-loom operators in India, Pakistan and Peru or the cobblers of Ecuador will suffer in competition with modern industry. A separate policy should offer these people a means of transition but not provide them an incentive to remain engaged in their traditional fields.

Industrialization policy can speed the transition of traditional artisans into modern small scale manufacturing industry. In West Cameroon, for example, the district governments have established artisan sheds in the market places of towns. This policy has begun to create service industries; tailors and dress makers can be seen using sewing machines and cobblers using grinders to finish shoe soles. In Karachi, Pakistan, a few carpenters can be seen using electric tools. Persons engaged in such activities are in a transitional stage between being traditional artisans and the managers of small factories.

Policies for the provision of work space in public markets, the extension of loans to purchase equipment, and the furnishing of literature on modern designs will stimulate such artisans to improve and expand their activities.

#### 4.3 Industrialization and Employment

Industrialization policies of some countries have perhaps gone too far in trying to make industry a vehicle for raising employment. Such policies have given higher priority to social problems than to industrialization. For example, the deliberate fostering of hand loom weaving in India and Pakistan. Nevertheless, social problems and unemployment are realities that must be faced in the total program for the least developed countries.



Therefore it is useful to consider what types of industry and especially why types of technologies can yield the greatest employment. Appendix C herewith, based on a study by Alexander Neilson for UNIDO, shows labor intensity in 85 types of small industry, ranked from the most labor intensive to the least labor intensive. The calculations are based on the investment per employee and the data show how much employment can be generated in industry per unit of investment. There is a surprisingly wide variation from industry to industry. For example, certain processes for making laundry soap require an investment of only \$450 per employee, whereas by contrast the manufacture of mufflers for vehicles requires \$9,000 per employee or 20 times as much investment.

To the extent that choices in technology are possible, the labor intensive technologies might be chosen. While sacrificing product quality and productivity, such choices can at least accelerate the process of industrialization while at the same time providing more employment.

There is one machinery supplier company in Japan (and possibly others the writers are not aware of) which specializes in filling orders for labor intensive machinery. Their catalog is entitled "Providing the World with More Food and Employment"; the cost is \$10.00 including airmail postage and the address is CECOCO, P. O. Box 8, Ibaraki City, Osaka-fu, Japan.

#### 4.4 Arguments for and against Government Ownership of Manufacturing Plants

The policy support of governments in programs of industrial development, especially in the least developed countries, is important and necessary. Some of the positive policies that can be taken to encourage industry are discussed in Section 4.5 below. But whether or not governments should actually set up manufacturing and service industries (as for example in Ghana, Guinea or Burma) is a moot point.

Where there is clearly no local managerial talent or initiative, it can be argued that the only feasible way to begin the process of industrialization is for governments to own and operate factories for meeting the local needs for essential products, for example, textiles, food, construction materials, and fertilizers.

The writers believe, however, that government-owned and operated plants especially small-scale plants can in the long-run have a damaging effect on industrialization. This is because private entrepreneurs are fearful of government competition and will divert their attention to trading or contracting and not to industrial production if there is a chance that government will enter the small industry field.

Usually the seeming absence of private initiative can be explained by the failure to adopt techniques for promoting small industry discussed in Chapter 5 below.

Sometimes governments seek to hasten industrialization by a program of "joint ventures" whereby a government agency and a private entrepreneur jointly contribute capital for the establishment of a manufacturing enterprise. This arrangement does serve the purpose of providing needed capital for industry, but it divides management between a private individual and a government agency. This division of management tends to lessen the initiative and decision-making flexibility of the private entrepreneur. Often governmental participation delays operating decisions because the government partner must usually obtain the clearances of his colleagues before making decisions having financial implications for the future. In general entrepreneurs are hesitant about joining forces with a government agency because they lose control of the company and the capital which they have invested.

Alternative techniques for providing investment capital are mentioned later in Chapter 5 of this report (see pages 53 through 62).

#### 4.5 Positive Aims of a Small Industry Policy

Parts 4.1 through 4.4 above have discussed problems that are serious in newly developing countries but which industrialization cannot entirely solve. Industrial policy should be aimed directly at other problems and might therefore have goals such as those suggested below.

A small industry policy should encourage the development of:  
(a) local industry that can produce goods and services of better quality and at lower cost than traditional industry for the public at large; (b) industry that is economically viable and can make a profit and thus contribute to capital formation, reinvestment and the ultimate tax base of the nation; (c) industry that can convert local raw materials into more valuable manufactured products; industry that can produce goods that are

(Continued on next page)

otherwise unavailable or else available only at high cost from outside. (Expressed in economic terms, new industrial capacity should be able to increase the total national product by increasing the value added through processing of raw materials.); (e) industry that can supply government agencies with products they need, e.g. footwear and uniforms for the police and military; equipment, bedding, cement blocks, lumber, furniture, and hardware fixtures for hospitals, schools and government buildings; (f) industries that provide repair services, e.g. typewriter and automotive repair and transport, telephone line and instrument repair and manufacturing; and (g) industry that can provide services and semi-finished goods for large-scale and established factories on a sub-contracting basis.

#### 4.6 Cultivating Entrepreneurs as a National Asset

In every country there are potential entrepreneurs, persons who by instinct and ability see the advantage to themselves of utilizing machinery to perform a service or make a product. These entrepreneurs are a natural resource which can be developed and expanded into a major national asset.

As with any natural resource, entrepreneurial skill does not make a contribution to the national economy unless it is deliberately developed. Nor is the contribution likely to be immediate, but usually takes a period of years before it can have an effect. Unfortunately the individual entrepreneur cannot be counted on to achieve a dramatically sudden or large scale impact on the economy. Taken collectively, however, the energy of a group of entrepreneurs can have a substantial economic impact.

#### 4.7 Dignifying the Status of Small Industry

National economic policies that recognize entrepreneurs as a national asset and which stimulate the latent productive energy of entrepreneurs can become a useful tool for economic development.

Unfortunately from the standpoint of administrative simplicity, the encouragement of entrepreneurs can be a troublesome process. For government officers it is more immediately productive to establish one large saw mill, for example, than to help establish 10 small furniture plants scattered throughout the country. The bureaucratic energy required to permit or to encourage the large saw mill is about the same as the energy required to establish a small furniture factory. Therefore the short-sighted tendency is to avoid the problems of numerous small plants and to encourage only large plants.

This tendency was recognized in a recent United Nations paper which recommended, "In every country the policy should be to develop small scale industry side-by-side with large-scale industrial projects ..... and not instead of, or in preference to, large scale or medium-sized industry." (quoted from "Policies and Programmes for the Development of Small-scale Industry", ID/CONF. 1/6, April 1967).

If the native industrial base is deliberately encouraged, such encouragement will culminate in a rapidly increasing tempo of industrialization and a general shifting from production based on human energy to machine energy. In this way the benefits of higher productivity will in the long run automatically ensue.

#### 4.8 The Need for a Definition

Historically, advanced economies started on a small scale and slowly expanded. However the newly developing nations of the 20th century have a potential time advantage in the sense that they can collapse generations of developmental history into a few decades. They can do this by drawing on the resources and knowledge of the developed world to hasten their own industrialization.

However, this acceleration requires policies to make sure that industrialization takes place. Without such policies, the contrasts of industrial technology within the country and the contrasts with the world outside will tend to perpetuate themselves with an ever increasing risk that the leadership in a developing country will fail in its efforts to bring improved living standards to the people.

Most of the countries at early stages of development have enacted some basic legislation to control or to encourage industrialization (see Table 2' on p. 36). Some have gone further than others and some have given specific recognition to the need for encouraging small industry and local entrepreneurs.

To provide thrust to a small industry program, small industry needs to be identified by an official definition and by programs designed to uniquely help small industry so defined.

Attempts to define small industry vary from country to country and different criteria are used for the definition such as: number of persons engaged, horsepower of installed machinery, investment in fixed assets (including or excluding land) value of production, value added, the use or non-use of mechanical motive power, native or expatriate ownership.

Once fixed by governmental policy, the definition can be helpful or harmful to the industrialization process. The main purpose of the definition should be to facilitate and certainly not to impede governmental efforts to assist native industry. There are countries where the definition is so complicated that it encourages evasion when benefits are made available to small industry; there are cases where given industries or individual plants fall awkwardly between the definitions of small or large industry and efforts to assist them

are thus retarded; there have been cases where the rigidity of the definition places a premium on being small and staying small and discourages industry from expanding or from becoming more highly mechanized.

To avoid administrative problems and yet to have a definition which affords a spring-board for encouraging native industry, a definition should be (a) simple, (b) tailored to encompass the types of native industry which a country seeks to encourage, (c) set high enough or large enough so that the majority of local plants have room to grow to the point where they are viable and no longer require governmental benefits, and (d) flexible in the sense that the definition can be revised to suit changing conditions or to permit the reclassification of plants as a small or large.

There have sometimes been factories classified initially as small or large but which are later found through technical analysis to be classifiable in a different category; to avoid interruptions in a processing stream, and to avoid a shifting of jurisdiction from one financing or approving agency to another, it is better to have flexibility in the definition.

There are numerous small industry definitions to choose from such as those cited in Modern Small Industry for Developing Countries by Gene Staley and Richard Morse (see page 12) or from the current practice of developing countries as reported in UNIDO papers cited in Appendix A of this report. The writers believe that a definition should be arrived at in part by reference to the experience elsewhere, but more important, the definition should be based on a physical survey of the native industry that already exists plus a concept of the kind of industry that policy makers want to encourage.

Usually a survey of what plants are already in being will disclose certain characteristics that differentiate native small industry from the local large scale industries. A simple definition based on the value of machinery installed plus the value of buildings is likely to be the most workable definition; for example, a plant having fixed assets valued at \$20,000 (\$50,000 or \$100,000) exclusive of land values might be defined as a small industry.

The value of land should be excluded in such a definition because of sharp variations in the price of land as between urban and rural areas or the price of land on an industrial estate as compared with the commercial value of land. The use of other criteria can complicate administrative determinations as to what is small or large and can result in more avenues for evasion.

#### 4.9 Incentives to Small Industry

Once defined, small industry as a subject of national policy usually needs to have certain incentives to grow and prosper. These incentives can consist of a range of benefits such as (a) reduced customs tariffs on imported raw materials, (b) exemption from corporate income taxes for three to five years, (c) preferential treatment in awarding contracts for government procurement, for example, allowing awards to companies which are defined as small industry

even though their bids are 10% higher than the lowest offer, (d) reduced rates for access to land on industrial estates or in industrial zones, (e) preferential allocations of transport space when needed, (f) access to arrangements for financing fixed assets and working capital, (g) assistance in management, and technical guidance, and (h) marketing of artistic handicraft products in tourist hotels, airports, and in foreign countries.

These benefits need to be administered with caution keeping in mind that the main objective is to encourage the growth or expansion of small industry. Once a company has grown beyond the status of small industry as officially defined, special benefits should be discontinued.

#### 4.10 The Importance of Implementing Techniques

No matter how well they are conceived, policies can fail unless effective implementing techniques are followed. Some of the techniques include the preparation of an industrial plan, building of infrastructure, providing vocational education, management and technical assistance, and financing arrangements. These techniques are discussed in the following chapter.

## 5.0 TECHNIQUES FOR EXECUTING A PROGRAM OF INDUSTRIALIZATION

### 5.1 The Basic Techniques

In general there are five essential techniques for the successful execution of a small industry program in the least industrialized countries:

1. Creation of a governmental policy agency for forward planning and for promoting the interests of small industry by obtaining local financing and support and by providing a focal point to which foreign sources of aid can commit their resources.
2. Creation of a small industry advisory service to provide management advice, technical information on machinery and raw materials, research services and marketing assistance, and special expediting of governmental actions such as customs clearance, import approvals, power and water systems installation, essential travel abroad for market investigation or training.
3. Providing a means for financing the capital needs of small industry.
4. Providing vocational training in trades and basic management skills.
5. Providing infrastructure such as power, industrial water, and transportation facilities. (Often these can be provided most economically by the construction of industrial estates or establishing industrial zones.)

There are additional techniques which may also be important depending on the circumstances of the country concerned. These include (6) the provision of common facilities if not established by private industry (e.g. foundries for casting spare parts, saw mills, wood kilns, tanneries, electrical repair services, automotive repair services), (7) the promotion of inter-company contracting, (8) help in securing government contracts, (9) the allocation of transportation or warehouse space needed by small industry, (10) assistance in labor relations, (11) the monitoring of standards for products and plant sanitation, (12) laboratory research and testing of raw materials and products, and (13) elimination or reduction of customs duties and taxes.

### 5.2 What Other Countries are Doing

Most of the developing countries are pursuing policies of small industry development but to varying degrees. Of the less developed countries, Colombia, Ecuador, India, Ivory Coast, Nigeria, Pakistan, Senegal, and Sudan appear to be especially active and are achieving varying degrees of success.

Table 2 which follows page 36 shows various techniques being used in African countries to promote industry specifically: (a) establishment of a policy, or legal basis for encouraging industrial development, (b) industrial promotion services such as management and industrial advisory services (c) industrial financing, (d) establishment of industrial estates or zones, and (e) vocational training. Table 2 is based on the reports of countries to the United Nations (see Appendix A) and is undoubtedly not a complete listing of actions being taken. The table does suggest, however, that about half the countries have not yet actively launched programs for industrial promotion services, industrial financing, development of industrial estates or zones, and vocational training. The data from Table 2 is summarized below.

**ACTIONS BEING TAKEN BY THIRTY-TWO  
AFRICAN COUNTRIES TO PROMOTE  
SMALL INDUSTRY DEVELOPMENT  
AS REPORTED IN PAPERS TO THE UNITED NATIONS**

	<u>Number of Countries Taking Action out of 32 Reporting Countries</u>	<u>Percent of Total</u>
a. Provision of a national policy or legal basis for encouraging industrial development	30	94%
b. Industrial promotion services such as management and industrial advisory services programs	18	56%
c. Industrial financing	14	44%
d. Establishment of industrial estates or zones	5	16%
e. Vocational training (probably some training is not reported)	10	31%

Source: Table 2



### 5.2.1 A Minimum Program for the Least Developed Countries

The five techniques mentioned above in section 5.1 above may be too elaborate and costly for countries at the lowest end of the development spectrum. At least a partial adoption of these techniques would probably prove helpful in even the least developed countries.

The discussion of the five techniques, starting with section 5.4 of this chapter is intended to suggest a range of possible actions, only some of which might be feasible in countries just starting to develop. In such countries, highly simplified techniques would be the best for promoting native industry.

Certain minimum measures might be considered as a point of departure. Probably a prerequisite would be the formalized recognition by the central government of the need for industrialization and the assignment of promotional responsibilities to a specific individual or office. Supporting the government level, the nucleus of an advisory service might be established as a second step. At first, such a service might consist only of a foreign expert and a few local counterparts. A modest loan fund for the financing of equipment and machinery, but not for loans in cash, should soon be made available because without financing, the policy and advisory efforts tend to be ineffective. Some minimum infrastructure might be considered such as the electrification of given area where artisans and repair shops could be attracted. Possibly the provision of work sheds might follow, even sheds as small as 30 square meters, but with removable partitions to permit ultimate expansion.

Table 2

**PROGRAMS TO PROMOTE SMALL INDUSTRY DEVELOPMENT IN AFRICAN COUNTRIES  
REPORTED IN PAPERS ISSUED BY THE UNITED NATIONS INDUSTRIAL DEVELOPMENT  
ORGANIZATION AND THE INTERNATIONAL LABOUR ORGANIZATION -- AS OF MID-1970**

Programme or initiative or activity	Country													
	Botswana	Guatemala	Kenya	Madagascar	Mali	Mauritania	Mozambique	Niger	Nigeria	Senegal	Sierra Leone	Tanzania	Togo	Zambia
1. Provision of national policy or legal basis for promoting the industry	X	X	X	X	X	X	X	X	X	X	X	X	X	X
2. Set up industrial promotional services or handicraft development center or industrial extension or counseling services or productivity center														
3. Set up small industry financing through government agencies or subsidized credit														
4. Set up small industry financing through commercial banks or establishment of credit facilities or rural co-operative credit or rural co-operative credit fund or credit insurance plan														
5. Industrial estates or zones already established														
6. Int. travel, studies or zones under administration														
7. Some vocational training (Note: Probably some training not reported)														
Source of information in UN papers as listed in Appendix A of this report	P-7	P-9	P-7	P-7	P-7	P-6	P-6	P-6	P-6	P-6	P-6	P-6	P-6	P-6

1. In reporting on the activities of the ILO, the ILO has used the following abbreviations: X - active program; Y - active program under study; P - program under study; N - no program; ? - information not available.

2. In reporting on the activities of the UNIDO, the UNIDO has used the following abbreviations: X - active program; Y - active program under study; P - program under study; N - no program; ? - information not available.

#### 5.4 Suggested Organization for Small Industry Development

Figure 1 on the following page illustrates the type of organization that could carry out the five basic techniques mentioned above. This concept starts with a semi-independent governmental policy and planning organization, shown as item A in the diagram. Subordinate to this agency, would be four specialized groups shown in the diagram as groups B, C, D and E as follows: Group B is concerned with industrial advisory services or counseling of entrepreneurs, research services to help determine promising industrial opportunities, execution and expediting of projects, marketing assistance and management development, that is adult education in business subjects. Group C is concerned with the planning and building of infrastructure needed to support industry. Group D is concerned with financing; and Group E with vocational training.

The organization for industrial development should contain a system of checks and balances. Group A, for example, should be promotional, and as such should not be hampered by the direct supervision of a ministry for its day-to-day operations; at the same time, it should, of course, work within the policy guide lines of an appropriate ministry (such as a Ministry of Trade and Industry).

The principal executive arms for Group A would be the Groups B and C engaged in day-to-day counselling of entrepreneurs, research to determine profitable lines of industrial development, and in establishing water, power, and transportation facilities subject to guidance by Group A.

As opposed to Groups A, B and C, the financing group, D, in many countries is independent in the sense that it has the right to challenge the recommendations of A and B. While it must necessarily rely on the technical judgements of Group B, it has every reason to question the feasibility of an industrial project before committing itself to financial support.

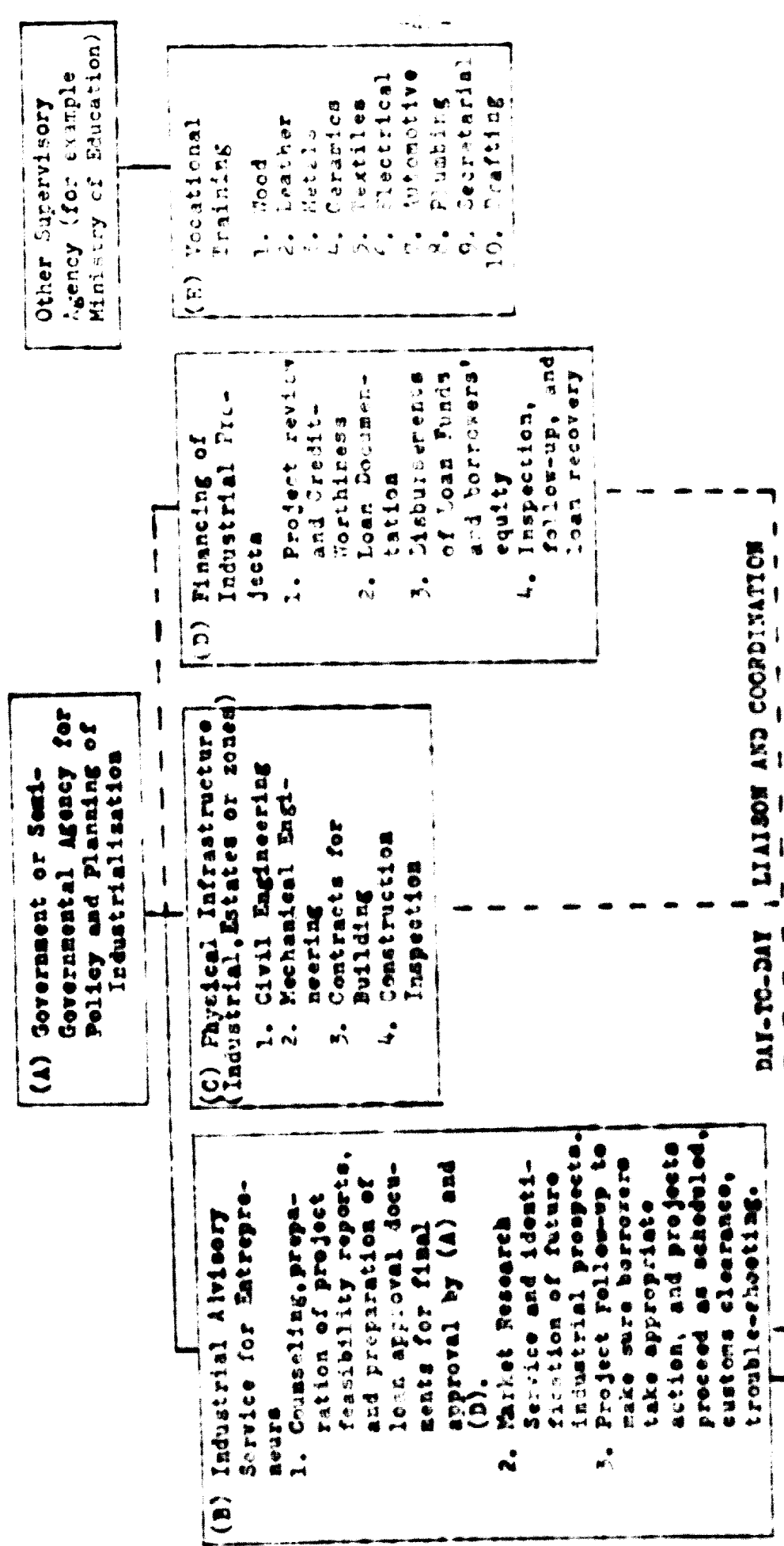
While Group D, the financing group may enjoy some independence from A and B, the active collaboration of Group D is critical to the success of A and B. This is because promotional and advisory programs are not appreciated and sometimes not welcomed by a business community unless they provide access to financing. The typical entrepreneur takes little interest in advice and other government agencies take little interest in promotion unless there is financing available to convert advice and promotional efforts into action. In other words no factories can be built or expanded unless there is money to translate ideas into reality.

Group E is shown in Figure 1 as being separate from the other groups; this is because the field of vocational education typically falls in most countries under a different ministry, is often funded by different budgets, and is intended to train personnel for a wide range of activities of which industry is only one component. The decisions as to the types of vocational training offered should be made, however, in response to the manpower requirements implicit in the program of industrialization.

Figure 1

SUGGESTED ORGANIZATION FOR PROMOTING INDUSTRIALIZATION

Figure 1



Notes

- (A) This agency serves as the focal point for applying to and receiving aid from foreign lending and donor agencies.
- (B) Staffed with engineers and economists to help industrial loan applicants start and complete their projects.
- (C) Can be entirely separate from (A); is usually a bank (or banks) or independent financing institution.

Marketing Services for handicrafts and other products

Management Training (e.g. accounting, company organization, personnel, marketing, labor relations, finance)

#### 5.4 Suggestions for an Industry Plan

A plan for industrialization, such as mentioned in part 3.2 (page 21 above), could well become one of the first concerns of Group A, the policy and planning group (see Figure 1). Suggested below are some caveats regarding an industry plan drawn from the experience of developing countries.

A plan should be based on a realistic appraisal of what kinds of industry already exist and can be expected. It is often more economical to build on what is already in being and to expand the capacity of factories, however primitive, that have already started. A prerequisite to such planning is of course a series of field visits to inventory what industry already exists and to at least estimate the fixed capital, employment, sales, profits, markets, the products and value added of a large sample. (People who have driven land rovers or jeeps or walked through the mud and dust to see factories can provide the kind of knowledge needed to help develop a plan.)

A plan should list potential projects for the establishment of new plants and the expansion of existing plants, ranked in order of priority, for example, projects to be financed in the first, second, third or later years and those which might be considered only in the long range. The plan should indicate the approximate local currency and foreign exchange costs of each project, and what is needed from local private sources, government funds, and foreign aid (see part 3.2 above on page 21).

Both manufacturing and service industries should be included; the latter are often overlooked but are critical in maintaining the momentum of industrialization. Essential service industries include the repair of automobiles, fuel injection pumps for diesel engines, electrical appliances, and general machinery including the casting of spare parts.

A plan should take into account the goods that are now imported and classify the types and quantities of such goods that can be made locally. Any plan should not be final but rather should recognize the fact many potentially profitable ideas conceived by private businessmen will later be acceptable in the light of experience. In some countries, projects for potentially viable plants have been rejected just because such projects were not included in the plan.

The inclusion of specific projects in the plan should not be taken as a positive and final endorsement of the projects, but rather such projects should be considered possible projects each of which is to be explored for actual feasibility and detailed costing at a later date.

The plan should be editorially well presented so as to become a vehicle for seeking the financial support of foreign aid agencies and a justification for the local financing of organizations such as those shown in Figure 1, item D.

The plan should be widely publicized as a means of suggesting to local entrepreneurs the kinds of industry that they might wish to consider.

## 5.5 Industrial Advisory Service for Entrepreneurs

Many countries have found that a government-sponsored industrial advisory service is the nerve center of an industrial development program. (See item B in Figure 1.) Staffed with young professionals having backgrounds in engineering and marketing economics, this group typically has the task of directly stimulating the growth of manufacturing and service industries by generating enthusiasm and knowledge for industrialization.

Usually such a group works with businessmen or plant managers and grounds itself in a thorough knowledge of the day-to-day work problems of local factories. It can serve as the eyes and ears of the policy group (item A in Figure 1) and can provide a practical basis for planning and for the documentation of requests for foreign aid or domestic lending.

The measure of success or failure of this industrial advisory service is: The number of profitable manufacturing and service plants established or expanded. Some of the initial steps that might be taken by Group B are mentioned below. The execution of these steps serves the dual purpose of training key officers and of providing data for the industrial plan.

### 5.5.1 Finding out What Products are in Demand

An initial step for the research officers of the industrial advisory group would be a survey to determine the local demand for products and services. The resulting information would be basic to the industrial plan mentioned earlier.

In identifying products, reliance on six-digit import figures would be helpful, but not enough. Careful interviews with traders, importers, and a sample of consumers would also be necessary. The objective would be to find out consumption of such products as dinner ware, matches, candles, knit goods, blankets, flash lights, enamel ware saucepans, pots, drinking glasses, combs, bottles of hair oil, soap, etc.

In the services field, the objective would be to find out how many diesel engines, how many typewriters, and how many radios, etc. need repair and how often.

The survey should also cover government procurement for hospitals, schools, the military, police, public works department, air ports, and power plants.

### 5.5.2 Knowing Local Industry in Detail

An initial task for counselling officers in the advisory group would be to learn about the local industrial community in detail through field trips and plant inspections and to classify local industry by product groups as covered by the ISIC codes (International

Statistical Industrial Classification). (See Appendix E.)  
Individual counselling officers might tend to specialize in a given type of industry.

### 5.5.3 Helping Entrepreneurs and Identifying Good Managers

The advisory group would continually act as a special pleader for entrepreneurs in seeking to expedite their applications for financing, facilitating customs clearances, expediting the completion of power, water and transportation facilities with the help of Group C (see Figure 1), and would help provide guidance in determining the kinds of training for employees through the vocational schools in cooperation with Group E (Figure 1).

Part of the encouragement to entrepreneurs would involve liaison with government agencies in charge of procurement of goods and services, for example of schools supplies, uniforms, telephone and telegraph equipment, building fixtures, electrical contracting, automotive repair. The group would then help direct such procurement to qualified entrepreneurs. Similar assistance to entrepreneurs would include the encouragement of sub-contracting as between major established companies and new industries.

A major task of the industrial advisory group would be to identify candidate entrepreneurs from among such groups as importers, promising graduates of vocational schools, craftsmen, or supervisors in existing plants.

After industrial projects are approved, the group would help entrepreneurs (a) determine the specifications of machinery, (b) monitor compliance with specifications on the part of machinery suppliers, (c) assist banks or financing agencies (see Group D in Figure 1) in correctly listing machinery on L/C's, (d) monitor suppliers' requests for amendments of shipment dates and documentation, (e) help entrepreneurs to visit operating plants within the country or abroad to observe management and production techniques, and (f) help entrepreneurs design and lay out their plants, and make effective contracts for construction.

### 5.5.4 Selecting Machinery

Once financing of industrial equipment has become available to a developing country, the industrial advisory group faces the critical task of selecting machinery for new or expanded plants. This function deserves special mention because banks cannot open letters of credit and the feasibility analysis of individual projects cannot be completed without cost estimates of the machinery, and a forecast of productive capacity and operating costs.

The selection of machinery often involves an identification of suppliers in a given source country. This is because aid loans from the United States, U.K., France, Scandinavian countries, or Japan are often "tied loans" in the sense that machinery can only be purchased from the country furnishing the foreign aid.

Extended correspondence with suppliers is sometimes needed in order to arrive at a selection of machinery. Unfortunately, suppliers of industrial machinery are usually reluctant to send detailed information regarding machinery to countries where no previous pattern of procurement has been established or where the procedures for payment have not been tested. To elicit interest from such suppliers, it is useful to work through the commercial officers of embassies or consulates representing the country in which a supplier is located. These commercial officers are usually willing to help in the identification of suppliers and will often forward copies of correspondence to the suppliers in order to assist the industrial advisory group in obtaining detailed cost or engineering information. Once a supplier furnishes a firm offer with prices (often called a "pro forma invoice" or "quotation"), project feasibility analysis can proceed.

Usually at this stage, expert engineering advice is needed to review the machinery specifications and to determine whether the proposed equipment is balanced, has the correct capacity, is suited to the local electrical supply, and can be maintained in the country.

In almost any capital city or port town there are representatives or agents of machinery suppliers (sometimes called "indenters"). This community of importers is often small at first, but as an industrial development program gathers momentum, these agents will increase in numbers and in engineering competence. Slowly these agents can begin to provide very useful support to the industrial advisory group. They can help in recommending equipment, provide operating manuals and engineering advice, and can often be persuaded to arrange for the sending of installation and start-up specialists from the supplying country or from some nearby country where the machinery they are selling is already in operation.

To strengthen the community of import agents, it is often useful for the industrial advisory group to maintain a library of certain standard reference works that identify machinery suppliers. Some of the well known guides or sources of information on machinery suppliers are: Export Directory of Denmark; Kompas, the French guide; Who Makes Machinery, a West German guide; Standard Trade Index of Japan; Mac Rae's Blue Book and Thomas Register of the United States. These and other guides to machinery selection are mentioned in Appendix D of this report. (\*)

As background for selecting specific machinery, information on general machinery requirements and costs can be found in publications dealing with "package plants" or "model schemes". Some of the best literature of this type has been prepared in India through the Small Industry Extension Training Institute (SIET) in Hyderabad, Andhra Pradesh, India. Similar

(\*) A useful guide to labor intensive machinery is available from UNICEF, entitled "Providing the World with More Food and Employment". The cost is \$10.00 including air mail postage (P.O. Box 8, Utsunomiya City, Oma Prefecture, Japan.)



material has been prepared by the USAID in Washington, D.C. known as "Industry Profiles". The East Pakistan Small Industries Corporation (EPSIC), in Dacca, East Pakistan has prepared an extensive series of "Investment Briefs". These sources of information indicate the types of machinery, processing capacities, costs, and power requirements for equipment needed to manufacture products or provide services typically furnished by small scale industry such as: knit-goods (hosiery), ceramics, leather goods, automotive repair, foundry products, metal and wooden furniture, ready made garments, printing.

#### 5.5.5 Selecting and Training Officers for the Industrial Advisory Service

The least developed countries face a formidable task in building an industrial advisory service such as the one discussed. Possibly the functions outlined above may seem too complex to even consider, for example such functions as finding out what products are in demand, surveying local industry in detail, helping entrepreneurs, and selecting machinery.

Where a choice of qualified personnel is limited, the only course of action is to begin organizing an advisory group on a small scale with a cadre of 4, 8 or 12 officers. Hopefully these officers might be university graduates with prior training abroad, an especially important qualification for the research staff; if not, they should hopefully be graduates of secondary schools and selected because of their aptitudes for engineering, mechanics, research work, helpfulness, and humility (an overbearing officer may jeopardize relations with businessmen).

Difficult though the selection process is, finding the best personnel is a task of prime importance in launching the industrialization program. This is because the group can help formulate the industry plan, provide counterparts for foreign experts, obtain data to prepare feasibility studies, plan industrial estates (see part 5.8 of this report below), advise financial institutions on the needs for financing, and, above all, cajole, encourage and lead entrepreneurs to start factories and workshops.

Once organized, two initial tasks can be usefully performed by the newly recruited officers of the industrial advisory service: (a) helping formulate the industry plan by finding out what products are needed; see part 5.5.1 above; and (b) learning in detail the characteristics of local industry; see part 5.5.2 above.

A useful training step to follow would be a group trip to visit several foreign countries and to see first hand the operation of productivity centers, other industrial advisory groups, vocational education programs

and to inspect plants of all sizes, industrial finance banks, and industrial estates. Only the most outstanding officers could qualify for the first such training mission.

The training mission, carefully scheduled and documented has several desirable consequences: It is likely to produce a final report which can be later used as a source of guidance in the work of the advisory group; the training will bring about an awareness, often for the first time, of the nature of manufacturing and all the considerations necessary to establish and operate a plant. The trip will enhance the prestige of the group in the eyes of the local business community and government agencies. Finally such a training trip builds an esprit de corps which will endure for many years.

The training abroad should stress observation, the reporting and critical appraisal of what was observed, and the collection of documents such as the brochures of industrial estates, productivity centers, industrial banks, promotional agencies, and manufacturing companies visited. Machinery catalogs should be collected by the engineers in the group.

The training trip abroad can be of short duration, possibly 6 to 8 weeks, but should be meticulously scheduled in advance and the group should be accompanied by a senior officer or foreign advisor who can require punctuality in meeting appointments and a systematic reporting and a critique of what was seen and heard.

Formalized training within the country is another method of upgrading the skills of officers selected for the industrial advisory service. In Ivory Coast, in early 1970 a training program was being organized for the personnel of the Office de Promotion de la Petite et Moyenne Entreprise Ivoirienne (OPEI). The training course, planned to start in October 1970, would consist of 120 hours of classroom instruction and 45 hours of plant visits. Instruction was to be furnished by experts from the ILO and from private companies located in the capital city, Abidjan.

The course work was planned to include lectures in: (1) methodology for surveys and research reports, (2) industrial production and process engineering regarding metals, wood, leather, textiles, plastics, glass, operation and repair of decorticators, refrigeration equipment, internal combustion engines, electric motors, and methods for construction and electrification, printing, and photography, (3) economics, economic feasibility research, and company analysis, (4) finance and accounting practices, (5) local legislation and regulations governing industry, (6) management and marketing principles, (7) production methods and work organization in plants, (8) teaching methods. (Further information regarding the Ivory Coast training course is contained in a study by

Benjamin P. Spiro entitled Services for Small-scale Industry in West Africa, UNIDO, 23 January 1970 (ID/WG.53/2: 19/46.94/2).

The training course could usefully include basic statistical procedures for calculating annual average growth rates (compound interest tables), rates of decline, the use of reciprocals, and the operation of calculating machines and slide rules.

## 5.6 Financial Assistance to Small Industry

The industrial policy group and the industrial advisory group mentioned above cannot function effectively without a link to financial assistance (see Group D in Figure 1). This is because policies and management assistance are not productive unless financing is available to establish or expand industry. Usually this financing implies local currency and foreign exchange in a ratio of about 2 to 1, that is 2 units of local currency are needed for every 1 unit of foreign exchange, but the ratio varies widely depending on the type of plant and the extent to which machinery can be locally supplied. An illustration of the ratios in East Pakistan is shown in Table 3 on the following page.

### 5.6.1. Use of Banks

To provide a financing mechanism for industry, developing countries are increasingly considering the use of commercial banks. In countries where capital, professional people and institutions are scarce, and where government budgets are small, it is useful to take advantage of institutions already in being. Commercial banks offer a well established network of branches to help with industrial financing.

The traditional preoccupation of banks with short term (e.g. 60 or 90 day), fully-secured financing is a problem and initially inhibits banks from participating in loan programs. However, the reluctance of banks can be overcome if governments are willing to extend credit or guarantees to banks (or else reduce the requirements for reserves held by the Central bank) in such a way that a lending bank can minimize or eliminate its risks. In turn, the banks come to realize the value of cultivating long-term customer relationships with promising entrepreneurs and machinery importers. When a program of small industry loans begins to gather momentum, banks will usually participate for fear of losing depositors to their competitors.

Banks are also reluctant to participate in a loan program for small industry because the banks do not have the professional staff capable of appraising the technical and economic feasibility of proposed industrial projects. This reluctance can also be overcome if procedures are established whereby all applications for small industry financing are carefully reviewed and approved in advance by technical officers of the industrial advisory group.

-10-  
Table 3

**SAMPLE OF LOCAL CURRENCY AND FOREIGN EXCHANGE CAPITAL  
REQUIRED TO FINANCE 216 SMALL INDUSTRY PLANTS RECOMMENDED  
TO IBRD IN EAST PAKISTAN -- 1969 <sup>a/</sup>**

(Unit: thousands of U.S. dollars)

(A) <u>Type of Plant</u>	(B) Local Currency Capital Required (Working Capital for 3 Months) <sup>b/</sup>	(C) <u>Foreign Ex- change Capi- tal Required</u>	(D) <u>Total Capital Required</u>	(E) <u>Units of Local Currency Required per Unit of Foreign Exchange (B/C)</u>
Average for all 216 Plants	\$ 71 (\$30)	\$ 37	\$ 108	1.9
Hand sprayer for insecticides	124 (\$53)	74	198	1.7
Rice mill	107 ( 63)	63	170	1.7
Cast iron foundry	86 ( 42)	11	97	8.2
Umbrella ribs	42 ( 21)	32	74	1.3
Fish nets	62 ( 15)	39	101	1.6
Mosquito netting	86 ( 32)	53	139	1.6
Terry-cloth towels	111 ( 46)	74	185	1.5
Blankets	57 ( 21)	32	89	1.8
Camel back for tire retreading	61 ( 21)	42	103	1.4
Leather tanning	103 ( 42)	53	156	2.0
Plastic utensils	53 ( 21)	21	74	2.5
Soap	105 ( 42)	53	158	2.0
Vacuum flasks	132 ( 32)	109	241	1.2

<sup>a/</sup> Source: Application to IBRD from East Pakistan Small Industries Corp., May 1969

<sup>b/</sup> Figures in parentheses for working capital are included in the larger figure for local currency capital required, i.e. \$30 is included in \$71.

### 5.6.2 Lending Principles and Procedures

There are many methods for industrial lending including those discussed in such publications as "How to Purchase Loans for Mechanization of Small Industries" by J. A. Szeparek (Industrialization and Productivity Bulletin, No. 1, U.N. Publications, Series No. 58:II.5.2), and "Financing of Small-scale Industries in Underdeveloped Countries", Industrialization and Productivity Bulletin, No. 3 (U.N. Publications, Sales No. 50.11.3.1), and Dr. Robert Savenport's comprehensive study, Development Financing for Modern Small Industry. (See Appendix B, Item B-5.)

Although lending methods vary widely from country to country, the author of this paper believes that the following principles are useful in establishing a small industry loan program in the countries just starting to industrialize.

### 5.6.3 Blending Safeguards and Concessions

Loan procedures for small industry should reflect a blend of safeguards for the lending institution and concessions to the borrowers. The criteria of bankability that apply in advanced countries and insistence on full security against loss are unfortunately not entirely compatible with the objective of promoting small industry in a developing country.

This is because small scale industries in developing nations face too many uncertainties and problems to be graded as first class security for conventional bank loans. A typical small scale industry faces such problems as inexperienced management, unpredictable shortages of power and water, a shortage of technical skills, problems of clearing raw material or machinery through customs, uncertain markets, unforeseeable consequences of natural disasters and political disturbances.

Also small-scale industries often succeed or fail depending on the ability of only a few individuals or sometimes a single individual; these key people may fall ill or lose interest, and their authority and skill cannot be readily replaced.

### 5.6.4 Safeguards for Lenders

There should nevertheless be certain safeguards to avoid the problems of unrestricted lending and unrecoverable loans that characterized the early post-war programs of development boards in African and Asian countries. Some desirable safeguards include: (a) payments should flow from the lender to suppliers rather than to borrowers as much as possible, that is loan funds should be used to purchase supplies and machinery directly for the borrower.

(b) Funds should be paid for machinery, supplies and services only when certain evidence of need is furnished, for example a certificate can be furnished by the industrial advisory group stating construction has reached floor, or ceiling, or roof level or that machinery is ready for installation.

(c) Before approving a loan, some contribution from the borrower is needed to make sure that the borrower has a serious intent. The contribution can be either in the form of a cash deposit in the bank or else a bank guarantee that money is available. The amount of the cash contribution can of course vary, but in the writer's experience some 20 to 30% of the total estimated project cost is a desirable minimum. (Usually the opening of a letter of credit for machinery imports is a dramatic point in the history of a project and is the best time for requiring the borrower's deposit.)

(d) Once a cash deposit is made by a borrower, he and the lender should release funds together on a step-by-step basis for specific purposes, for example when the plant is completed and ready for operation, the lender might release 25% of the working capital from his own funds while the lending institution would release simultaneously 75% of its loan funds for the same purpose. The borrower and lender move forward simultaneously. This technique exerts pressure on the borrower to use working capital funds prudently and for the purposes originally contemplated in the loan.

(e) Loans should be made only for a specific industrial project that has been researched, preferably by means of a feasibility study. Such a study should at least describe the project, the potential markets, the cost of machinery, land, buildings and raw material, and should document by means of calculations and forecasts the borrower's capacity to repay the loan over a 5 to 10 year amortization schedule.

### 5.6.5 Working Capital

Lending agencies differ in their treatment of loans for small industry working capital. Because of the poor security and risks of lending, working capital loans have been opposed by certain lending institutions. In general, however, a new industrial plant succeeds or fails depending on working capital to buy raw material and hire a work force. In countries like Japan, for example, working capital financing is now a routine practice; the historical success of Japanese industry to bank financing for working capital has been one of the principal reasons for the success of industrialization in Japan. In developing countries, the needs for working capital are equally pressing.

If working capital loans are approved after a new plant is established or after expansion of a factory has been completed, the risks are substantially reduced. Once a bank or lending institution has advanced capital for fixed assets, it is usually a prudent risk to advance some funds for working capital, for example, enough capital to make sure that

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the new plant can operate for at least a three-months period. Table 3 on page 46 illustrates the amounts of working capital advanced for small industry loans in East Pakistan. (See column B figures in parentheses.) Such amounts will of course vary depending on the type of plant, the costs of raw material, and the size of the employee payroll.

#### 5.6.6 Loan Documents

Various loan documents which incorporate the foregoing principles have been prepared and are available on request. These documents have been prepared by industrial loan specialists based on U.S. and U.K. experience, but are tailored to the needs of a developing country. Possibly the procedures are too complicated for countries which are just beginning to industrialize but they are presented herewith as a point of departure for considering lending procedures.

#### 5.6.7 "Leverage" from Small Industry Loans

The argument is sometimes advanced that entrepreneurs do not have capital and therefore the terms of lending for small industry loans and the percentage of loan funds as a component in the total project cost should be extremely favorable to the borrower.

In most countries, however, there are persons who are already established in business as traders, building contractors, operators of bus lines, owners of restaurants and hotels, or retail store proprietors. There are also young graduates of polytechnics who have access to funds from friends and relatives.

Many of these people are potential entrepreneurs who can be convinced of the advantages to them of starting a factory or expanding an existing plant. This is because of the "leverage" they can enjoy by combining their own capital with funds furnished by a lending institution. In developing countries where returns on capital are expected to range from 20% to 50%, an entrepreneur can obtain such returns on his own capital by combining his funds with those from a bank to start a factory as shown in the following illustration:

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**ILLUSTRATION OF RETURNS ON CAPITAL AND ENTREPRENEUR'S  
OWN EQUITY FROM A SMALL-SCALE WARP KNITTING PLANT  
OPERATING AT 70% OF CAPACITY 300 DAYS PER YEAR**

(Unit: U.S. Dollars, Thousands)

a. Fixed capital required for establishing warp knitting plant with 208,000 yards annual capacity .....	\$ 87
b. Working capital for 3 months operation .....	49
c. Total capital required .....	136
d. Loan capital (i.e. borrowed capital) .....	52
e. Entrepreneur's own capital (i.e. equity) .....	84
f. First year sales .....	263
g. Cost of raw materials and expenses .....	205
h. Profit, assuming tax holiday (f-g) .....	58
i. Returns on total capital (h/c = 58/136) .....	43%
j. Returns on own capital (i.e. return on entrepreneur's own equity or h/e = 58/84) .....	69%

**Source: Application to IBRD from East Pakistan**

The above illustration shows a return of 69% on the entrepreneur's own capital. However the percentage of equity in the above case is high, well over half of the total capital or 62% ( $84/136 = 62\%$ ). In more typical loan arrangements, especially in countries which are just beginning to develop, the entrepreneur may not be required to finance such a high percentage of the total capital requirement. Therefore the return on his equity of 69% is actually low when compared with a loan in which the entrepreneur provides only 20% of the capital needed.

Given the same facts as shown in the above illustration, but assuming that the entrepreneur's equity is only 20% (as compared with 62% in the above illustration), then the annual returns on capital to the entrepreneur are very generous, namely 215%. (Profit of \$58,000 divided by entrepreneur's equity of \$27,200 = 215%.) In other words, the



entrepreneur could recover his equity in six months and make a profit of more than the equivalent of his initial investment in the next six months.

Potential results from an investment such as these can help in showing entrepreneurs the possible advantages they can obtain from starting small industry.

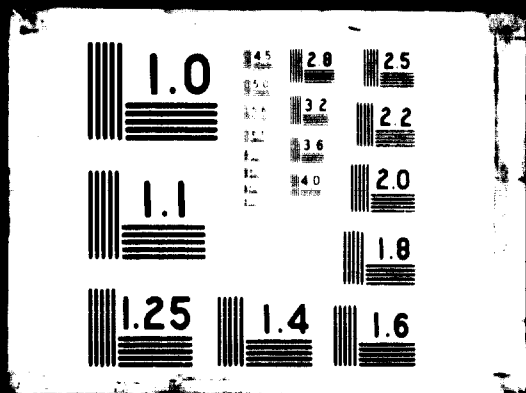


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## 5.7 Vocational Education

Most of the least developed countries recognize the need for vocational training to provide training for the labor force required in manufacturing and services. Table 2 on page 34 of this report probably understates the extent to which vocational training programs are being provided. However it is the writer's opinion that most of the least developed countries may not be giving sufficient stress to vocational education.

Vocational education serves a dual purpose. First, it helps meet the manpower requirement for future industry, and second, it offers training for school drop-outs (school leavers) or for those young persons financially unable to continue ordinary schooling.

### 5.7.1 Nigeria's Vocational Improvement Centers

One of the most successful programs of vocational training observed by the writer is in Nigeria. The following description is taken from a report prepared in 1968 by H. E. Robison and the writer after inspecting vocational schools in Nigeria (see Appendix B, item M-17). The Vocational Improvement Centres in Nigeria use the physical facilities of existing polytechnics or government workshops, but concentrate on the evening hour training of young men already employed during the regular working day.

#### Vocational Improvement Centers in Nigeria

Vocational Improvement Centers in Nigeria, commonly referred to as VIC's, are night schools for apprentices. All trainees must be working at a trade in the day time. The trainees are boys generally in the age range 16-25, with little formal education.

Each VIC is operated in an existing technical school or government workshop, and uses the day-time staff of the technical school or workshop, paid overtime for evening work.

The VIC's offer practical skills, and enable a boy, at the end of one year, to pass the London Guilds examination, or the Nigerian Federal Ministry of Labour trade test.

There is an important difference between these VIC's and the apprenticeship training schools introduced before independence. The old system taught the boy only the manual operations of his trade. Because of a lack of understanding of the underlying principles of technology, the boy could not introduce innovations in his work. And with rapidly changing technology today, such boys are quickly outdated and unemployable.

The VIC's, by contrast, believe that during a 10-month evening course, 2-hours per evening, 4-days per week, half the hours of instruction should be devoted to manual skills, and half to general education subjects, such as trade-related

mathematics, simple book keeping, and English as a tool for reading instructions and communicating with the shop foreman.

Technologies taught are selected for each city according to the needs of local trade and industry.

The course is free to the trainee, being supported at Kaduna by the Ministry of Industries, at all other cities by the Ministry of Education.

One man-year of training is costing the Nigerian authorities about £45 (\$116). This has proved the cheapest, most effective apprentice training program in Middle Africa, adapted to the local needs of each community.

In a Table below, the VIC's presently operating or planned are listed.

List of Vocational Improvement Centres:  
Opened, and Planned

<u>Location</u>	<u>Trades offered</u>	<u>Present Enrolment Capacity</u>
Kano Kano State Began Jan. '67	Motor Mechanics	18
	Carpentry/Furniture making	18
	Block laying and concreting	18
	Electrical installation	18
	General fitting	18
	Plumbing	18
Jos Plateau State Began March '67	Motor Mechanics	18
	Carpentry/Furniture making	18
	Electrical Installation	18
	General Welding	18
Katsina No. Central State Began Dec. '67	Motor Mechanics	18
	Carpentry/Furniture making	18
	Electrical Installation	18
	Block laying and concreting	18
Maiduguri No. East State Began Jan. '68	Motor Mechanics	18
	Carpentry/Furniture making	18
	Electrical Installation	18
	Block laying and concreting	18
Sokoto No. West State Began April '68	Motor Mechanics	18
	Carpentry/Furniture making	18
	Electrical Installation	18
	Block laying and concreting	18

List of Vocational Improvement Centres:  
Opened, and Planned

(cont'd)

<u>Location</u>	<u>Trades offered</u>	<u>Present Enrolment Capacity</u>
Ilorin	Motor Mechanics	18
Kwara State	Carpentry/Furniture making	18
Began Feb. '68	Painting and Decorating	18
	General Fitting	18
	Electrical Installation	18

Proposed New Vocational Improvement Centers

Makurdi	Benue-Plateau State
Gombe	North-Eastern State
Minna	North-Western State
Kabba	Kwara State

5.7.2 Training Combined with Production

Efforts have been made from time to time to combine training with production as a means of helping to finance the cost of training institutions. For example, a training facility for woodworking is sometimes used in part for training operators of woodworking machinery and in part for the manufacture of furniture to be sold. While this practice may help to finance the overhead of training institutions and pay the salaries of instructors, the concept of "training-cum-production" has some disadvantages.

The combination of production and training offers competition to small industries that have already started and is a disincentive to businessmen who would otherwise start their own production plants. In short, training-cum-production institutes have the effect of choking-off entrepreneurial initiative. A second problem is that the best trainees are sometimes retained as producers of merchandise to make the training institute more profitable. A third problem is that training objectives are sometimes subordinated to repetitive processes involved in production; this raises output and income for the institution but lessens the instructional content of the training.

5.7.3 Vocational Training Curricula

A survey of factories and service establishments could be usefully undertaken by the Industrial Advisory Service shown in Figure 1 on page 38 (see Group B). Such a survey, based on a fairly large sample, would seek answers to such questions as: (a) What skills does your establishment need now and what are your anticipated needs for the future? (b) How many people of each skill do you need now and do you anticipate for the future? (c) What are the deficiencies in training of your employees?

Future needs for skilled workmen could be further deduced from the industrial plan described earlier in section 5.4 on page 39 of this report.

In general the vocational training programs for the least developed countries could consider such subjects as: carpentry, construction trades, electrical installation, welding, plumbing, automobile repair, painting and decorating, mechanical drawing, radio repair, telephone repair, typewriter repair, leather work, textiles, and clerical skills. As indicated by the Nigerian case, training in non-technical skills such as trade-related mathematics and foreign language comprehension could usefully be included.

#### 5.7.4 Raw Materials and the Quality of Training

In planning vocational training, a factor sometimes overlooked is the importance of having enough raw material and operable machinery for trainees to use. There should, for example, be an ample number of car or truck engines to dismantle and repair, an ample supply of wood for making furniture, and sufficient wire and tape for training in installation of household circuits.

The absence of materials and operating machinery tends to reduce training to a series of lectures and reduces the qualitative results of a training program.

## 5.8 Infrastructure

One of the techniques needed for industrialization is the provision of infrastructure for industry including motive power, industrial water, all-weather roads, access to rail or marine transport, banking facilities, adequate sewage and drainage.

The mere existence of such infrastructure is, of course, not enough to assure the growth of industry, but through interaction with the other techniques listed above on page , the providing of infrastructure can help to create the kind of environment in which industry can grow.

### 5.8.1 Industrial Estates

Industrial estates have become an accepted measure for providing the necessary infrastructure. Estates, however, are not necessarily the best and are certainly not the cheapest means of providing infrastructure as mentioned later.

The advantages of industrial estates have been discussed in several specialized books including Industrial Estates -- Tool for Industrialization by William Bredo; Industrial Estates in India by P.C. Alexander; Industrial Estates by Peter H. Gloeckner, and Les Domaines Industriels en Europe et au Moyen-Orient, UNIDO (See Appendix B, items M-3, M-8, M-23). In summary, the advantages of industrial estates as mentioned in the above and other studies are as follows:

1. Accelerating economic growth by facilitating the establishment of new industrial enterprises through reduced capital requirements, and by the provision of financial assistance and technical guidance in a centralized locality.
2. Slum-clearance with the possibility of ultimate and appropriate town planning, prevention of haphazard growth, and creating optimum conditions for the growth of small industry.
3. Employment and training possibilities in a healthy environment for the labour force.
4. Provision of conditions favourable to a healthy development of internal and foreign markets.
5. Provision of necessary supporting industries for production of spare parts, as well as repair facilities.
6. Creating mutually profitable relationships between large, medium and small industry by the clustering of plants and by development of small industry, capable of supplying the needs of large industry.
7. Achievement of economies in construction by building facilities for several factories at the same time.



### 5.8.2 Costs of Industrial Estates

The costs of estates differ depending on such variables as the extent to which access roads are needed, the extent to which standard factory buildings are constructed in advance, the depth to which wells must be drilled for water, the distance of power transmission or the capacity of sub-stations, the requirements for storm sewers during the rainy season, the requirements for land reclamation in low lying areas, the local policies as regards the style and permanence of construction, and the extent to which an estate is built-up for occupancy at the outset.

These variables have resulted in widely different development costs per acre. Costs in a sample of 25 estates in developing countries range from a low of \$1.69 per square meter (\$6,847 per acre) at Khulna in East Pakistan to a high of \$24.48 per square meter (\$99,650 per acre) planned for Ouagadougou, Upper Volta. As mentioned, no conclusions can be drawn from these costs as to the comparative economies of construction in each locality because the requirements of estates are different in each case.

The estates in Guindy and Okhla, India cost \$1.2 million each. The very large estate in Nepal, 140 acres, cost \$2.4 million. A 100 acre estate at Gujranwala in West Pakistan cost \$1.1 million.

### 5.8.3 Should There be Estates in the Least Developed Countries?

Despite the general acceptance of industrial estates as a tool for industrial promotion, a decision to build an estate raises some fundamental questions, especially in countries with meager financial resources.

The broad questions faced in deciding on the desirability of an industrial estate are:

- (a) Will the estate really help promote industrialization? and,
- (b) Will the estate be effectively utilized? Once in being, the measure of success or failure of an estate is of course the number of viable factories actually operating on the estate.

There are unfortunately estates in developing countries that have remained underutilized because of initial planning errors or because of inattention to the other essential techniques for promoting the growth of industry, mentioned earlier on page .

Specific questions, each discussed briefly below, relate to costs, location, number of estates, types of tenants and the desirability of having standard factory buildings built in advance.

#### 5.8.4 What are the Alternatives to Estates?

Developing countries, impatient as they are to expedite industrialization, sometimes consider estates as a sine qua non for progress. Given the costs ranging as mentioned from about \$7,000 to as much as \$100,000 an acre, a primary point to consider is the available alternatives to the costly investment in an estate.

In a number of countries, such as Colombia (Medellin), Ecuador (Guayaquil), or India (North of Delhi), advantage has been taken of new highways that extend from a major town into the suburbs. Rather than incurring the expense of preparing an estate, areas along these roads have been zoned for industry and there has been a spontaneous influx of new plants into such areas. Usually the highways have telephone and power lines near at hand. Industrial water is however a problem and individual plants tend to drill for their own ground water and to build overhead tanks. Nevertheless the use of major highways as industrial zones is an economical alternative to estates.

In other countries, non-residential suburbs are zoned industrially and city power, water and gas with short extensions of existing lines and pipes can supply new industry. Vocational training schools within easy commuting access of the town and conveniently close to plants have also been established in these zones.

There is another alternative, especially suitable for the least developed countries, a zone for artisan sheds. This can be a zoned area near a market place for one or two-man artisan-type establishments. At first such establishments tend to provide services only such as tailoring, shoe repair, corn milling, developing of photographs, rice milling, furniture repair, bicycle repair, or welding. Over time, these artisan establishments tend to branch out into actual manufacturing.

In market places, operators of service industries or artisan shops compete for floor space with the vendors of conventional farm produce or manufactured merchandise. If the artisan is just starting his trade, he usually cannot compete with established merchants for space nor can he pay the rental necessary for a prime location in the market place. This means that customers will often find artisan shops in inconvenient and scattered localities, removed from the central market.

Governments can facilitate the growth of artisan industry, improve the accessibility of their shops, and expedite the transition from service industries to real manufacturing by providing zoned work space as well as sheds, typically a row of compartments with brick or concrete walls, corrugated tin roofs, and open spaces near the roof in lieu of windows.

Natural economic forces, if not checked, will bring about a disorderly, overcrowded, sometimes polluted, and usually an inefficient dispersal of these artisan shops. However if there are orderly and well constructed sheds, renting at fees no higher than the prevailing market rates, artisan shops will tend to gravitate toward the premises provided.

Such alternatives as these could well be considered before the commitment of resources to a formalized industrial estate.

#### 5.8.5 Where should Estates be Located?

As mentioned, there are some industries that can be economically sited in rural areas, such as processors of agricultural raw materials or mineral raw materials that can be reduced in weight through processing. Many types of industry, however, require the nearness of a urban market to survive. (See Appendix F).

Some countries have sought to force rural industrialization by arbitrarily locating industrial estates in the agricultural hinterland. In cases where the tenant factoriss can be viable in a rural setting, the estates have succeeded, but often the number of potentially viable factories is limited, and the attainment of full occupancy can take many years.

If estates are to be built, there may well be several alternative sites. Rather than selecting sites in advance, it is be more economical to test candidate areas by prior study.

Each potential area might be studied with reference to comparable key points such as: (1) the density, purchasing power, growth rate and size of nearby population; (2) the availability of transportation, housing, medical facilities, schools, banks, power, and water; (3) probable government or large industry procurement of products that can be manufactured on the estate; (4) types of manufacturing and service industries needed in the area; (5) availability of raw materials for such manufacturing and the local needs for servicing; (6) characteristics and suitability of the local entrepreneurs and labor force; (7) the experience of other industries in the region and how many plants of what kind might be persuaded to occupy the estate; (8) existing local land costs so as to establish a low enough rental fee to assure estate occupancy and at the same time recover investment costs; (9) local needs for technical assistance, financing or marketing help, customs duty or tax relief, and vocational training; (10) views of local businessmen as to location; (11) development costs in detail; (12) phasing of estate development based on forecasts of the occupancy rate; (13) forecasts of revenue vs. cost; (14) feasible size of the estate and the extent to which common facilities are likely to be provided by private companies and what would be required as part of the estate facilities; (15) dimensions and types of standard factory buildings and required plot sizes for local industry.

If several possible sites were compared, the area which would cost the least and which has the best promise of future occupancy could be chosen for priority development. The development of less promising and more expensive areas should, of course, be deferred.

#### 5.8.6 How Many Estates?

If a policy decision is reached to proceed with an estate, questions can arise, especially between competing geographical regions, as to whether there should be one or several estates. The justification for one, two or more rests largely on the prospect for successful utilization. Certainly at first, the prudent course would be to plan for one only and base further decisions on actual experience.

If an agricultural region is productive enough to warrant resource-oriented agro-industries, then a cluster of such plants on an estate might be justified. This could mean for example, flour, rice and corn milling, oil seed crushing, fertilizer mixing, feed bagging and if the urban markets were promising, dairy products, vegetable and fruit canning, and cold storage.

For industries which supply consumer goods to urban markets, estates could be considered for the largest towns where the demand and local entrepreneurial interest seemed to assure adequate utilization of an estate.

However in all cases, the question of cheaper alternatives would have to be considered.

#### 5.8.7 What Kinds of Tenants?

If a decision is reached to proceed with an estate, the question arises as to what kinds of tenants should be invited. For example should the tenants include banks, restaurants, retail shops, handicraft makers, artisans engaged in repair services, cinemas, or housing? Should there be a mixture of modern and traditional industries or only modern mechanized plants?

There can be no universal answer to these questions, but in general, estate management policy should seek to fulfill the original objective of encouraging manufacturing industry thereby inviting as tenants only companies engaged in manufacturing plus those providing related services that enhance the performance of the manufacturers. This latter group might include banks, a post office, and a limited number of retail vendors if needed to meet the requirements of the local labor force. In a situation where demand for plots is high, estate managements can be selective and restrict tenants to manufacturing and closely supporting services. Where non-utilization has become a problem, estate

managements must ask themselves if it is better to allow their plots to lie vacant in the hope that eventually manufacturing tenants will be found, or is it better to lease land for fixed time limits for alternative uses. The writers know of one estate being developed in Pakistan on a "staggered" basis, that is only one section at a time. Part had already been developed with roads, power and water and was reasonably well occupied. The prospects for utilizing the undeveloped portion of the estate seemed to be unpromising for the near future and land was leased for farming or year-to-year contracts.

#### 5.8.8 Should There be Standard Factory Buildings Built in Advance?

Given the objective of industrial promotion, an industrial estate can perform its function best by offering to tenants every facility that contributes to industrial efficiency. Therefore factory buildings constructed in advance will be attractive to many industrial tenants.

There are of course risks and limiting factors on the extent to which standard factory buildings should be constructed in advance. The principal limitations are initial cost and the anticipated pace of occupancy. Another limiting factor is the necessity for keeping certain plots available for later occupancy by specialized plants with unique space and architectural requirements. For example a cold storage plant requires a building completely different from a leather suitcase factory.

Assuming an adequate budget and a three to five year target for full occupancy, there is good justification for the construction of standard factories in advance on a major portion of the estate. Also the more factories built, the cheaper the cost per unit.

Some justifications for standard factory buildings are as follows:

(a) A large proportion of small scale plants have similar space requirements and experience shows they can use non-specialized buildings; (b) standard buildings can usually be rented to almost any factory owner, but a specialized building once completed may not be easily rented; (c) standard buildings of modular construction can be expanded, assuming the estate layout allows space for expansion; in this way an enlargement of plant capacity is encouraged; (d) many entrepreneurs are not familiar with construction problems, have poor taste or judgment, some want unnecessarily elaborate premises, and others want to economize excessively by having unsightly or sub-standard construction; (e) the construction cost per factory is likely to be lower than the cost of factories constructed separately and individually; (f) several standard sizes for factory buildings can be planned, for example as suggested by E.D. Mills (in his study entitled, Les Domaines Industriels en Afrique, New York, United Nations, 66.III.B.2, 1965.).

### 5.8.9 Other Considerations

#### Appearance and Standards

An estate can be a device to promote interest and enthusiasm for industrialization. Therefore the estate should be constructed to standards somewhat higher than are typical of local small industry. Construction should be permanent to reduce maintenance costs and to enhance the estate's promotional value.

#### Time-Phasing

To conserve capital and to avoid mistakes, an estate can be developed on a modest scale at first and subsequent development deferred until warranted by the occupancy rate.

## 6.0 TECHNICAL COOPERATION FOR THE PROMOTION OF INDUSTRY

### 6.1 A Focal Point for Policy Level Contact

In general foreign agencies concerned with technical cooperation have competing claims on their resources. Although these agencies are prepared in principle to extend technical and financial assistance, they prefer to channel their expertise and financing only to countries where they can hope to achieve tangible results.

This means that technical cooperation for industrial development is more likely to be forthcoming, if recipient nations can demonstrate that they are proceeding to industrialize on the basis of clear official policies and well administered programs.

In a 1968 study prepared for the Ford Foundation by H. E. Robison of Stanford Research Institute and the author, the following comment was made about a small industry development program:

"No successful supervised credit program for small industry anywhere in the world has been able to operate without certain essential ingredients..... these include.... a governmental unit devoted to helping small industry to which foreign aid agencies can commit their assistance and use as their sponsor."

In making the above comment about a governmental unit, the authors had in mind an agency on which responsibility would be focussed for promoting small industry development. The existence of such an agency in any country helps assure a point of focus for technical cooperation and a policy level point of contact through which cooperating groups can deal with the government concerned.

### 6.2 Executive Agencies for Counterparts to Work With

Countries can make more effective use of technical cooperation if there is also a trained industrial advisory service to help in executing policies for industrial development. Officers of an advisory service who know local industry in detail and are articulate in describing what they know can work most effectively with foreign counterparts. They can provide factual information based on field work to offset the vagueness that typically confuses a foreign expert visiting a country for the first time.

Countries which have in operation a mechanism for loans to industry can better utilize technical cooperation and financial aid. This is because foreign experts can be assured that potentially their recommendations can be translated into action. Foreign loan agencies want to see a record of actual lending to small industry before committing their own funds, and they want to be sure that local lending institutions can be an effective channel for loans to industry.

A country can further enhance its eligibility for financial aid if the investment of funds in local industry is based on prior feasibility analysis. The provision of infrastructure for industry such as an industrial estate is clear evidence of determination on the part of a country to proceed with industrialization. This shows groups overseas that the country is using its own resources and land for the promotion of industry.

Training abroad was mentioned above (part 5.5.5). Such overseas training can be useful in helping a country utilize technical cooperation. Specifically an overseas inspection trip of six to eight weeks duration can be organized for officers concerned with such activities as: (a) industrial policy formation, (b) industrial advisory services, (c) industrial financing, (d) the development of industrial estates and (e) vocational training -- all essential activities for promoting industrialization. Such trips abroad should be carefully structured and supervised so that persons travelling abroad can observe, criticize and report what they learned, and adapt their findings to the situation at home.

Travelling abroad in small groups of 5 to 12 persons to observe and study the same subject has a beneficial interaction among the individuals concerned. Sometimes one member of a study team will see or understand a point that others will miss. Collectively they form judgements that are sounder than individual judgements. After such a group returns to the home country, the members can communicate effectively with foreign counterparts because they understand concepts and terminology which had been meaningless before their travel abroad.

### 6.3 Technical Cooperation Within a Country

Technical assistance can also be found without travel abroad. The writer recalls the example of Cadbury and Fry, Ltd., a British chocolate manufacturer operating a cocoa estate (plantation) in West Cameroon. Productivity of baked cocoa beans on the Cadbury and Fry estate was much higher than productivity achieved by small holders (local farmers). By systematically inviting the small holders to inspect the Cadbury and Fry facilities, local productivity was raised substantially. In Ivory Coast, technicians from expatriate-owned plants are being invited to assist in the training of industrial advisory personnel. In various West African countries, the officers of commercial banks have helped in establishing procedures for industrial financing. In East Pakistan, the representatives of foreign companies operating in that country provide lectures and seminars for the Management Development Center.

Consulates and embassies of foreign countries are a useful channel to sources of technical cooperation. They can support official requests for help, answer questions raised abroad, provide a channel to sources of technical information, and help to develop foreign markets for local industry.



#### 6.4 Articulating the Country's Needs

Countries at the earliest stages of development are not well known abroad. To assist technical cooperation agencies in becoming familiar with a country's development problems, it is useful to have a brief descriptive report on the status of local industry and programs for its improvement. A report, prepared in English and French, could usefully describe such topics as the national policy toward small industry, the industry plan, the agencies engaged in execution of the plan, the characteristics of local industry, and results achieved or hoped for in industrial promotion.

Such a report can also identify individual elements of an industrial development program, for example, the local industrial advisory service, the financing institutions or an industrial estate. The report can thus suggest to readers certain separately identifiable parts of the program to which technical cooperation might be specifically directed. Some technical cooperation agencies hope to achieve a greater impact by stressing assistance to only one or a few elements of a development program. For example, the Swedish Government concentrated its efforts on specialized training in woodworking fields in East Pakistan; the FAO has concentrated on a boat building technical assistance at Makurdi, Nigeria; the Italian Government at one time concentrated its help in West Cameroon to veterinary services; the Japanese Government has helped specific sericultural programs in southeast Asian countries. The Ford Foundation in the early 1960's concentrated much of its effort on the development of small industry in India.

#### 6.5 Capacity to Absorb Aid

For countries at the earliest stages of development, the capacity to absorb financing for new industry and the capacity to make use of technical experts is limited by cost and administrative factors.

The establish new factories both foreign exchange and local currency are needed at first and often raw material imports are needed later. The furnishing of foreign exchange usually sets in motion an initial requirement for local currency equivalent to two or three times the value of the foreign exchange itself (see Table 3 above), and without local currency, the import of industrial machinery is an economic waste.

The absence of local currency capital either from banks or entrepreneurs can be offset by "creating" local currency and thereby raising a country's ability to absorb imports of equipment. This generation of local currency by commodity imports was one of the costliest parts of foreign aid programs in the early 1950's. The least developed countries probably face a similar problem in planning to make sure that local currency availabilities more than match foreign aid.

In planning new manufacturing plants and in the selection of equipment and processes those that entail the least local capital are often the most likely to prove feasible.

The provision of experts for industry also gives rise to local expenses and entails the creation of local organizations such as the policy agency and the executive agencies mentioned above. Without these agencies, foreign experts can accomplish little or alternatively they may be unable to resist the temptation to do too much themselves.

The absence of qualified agencies and institutions raises a question as to the extent to which a foreign expert should (a) personally become involved in operations and (b) to what extent should he confine himself to a purely advisory role and to the establishment of policy. In the least developed countries, it can be argued that a foreign expert should roll up his sleeves and perform even routine tasks. Such "do-it-yourself" behavior can be self-defeating unless the expert's work is undertaken in close association with local counterparts and always aimed at the ultimate goal of training counterparts to do the job themselves. If an expert's involvement is tempered in this way, a country's capacity to absorb technical assistance can be raised and the progress of industrialization hastened.

No true development of local skills can take place until the local counterparts are given responsibility and a chance to actually participate in the planning and execution of industrialization. For example, the management of key factories and the administration of import duties and salt taxes in pre-war China remained for decades in the hands of foreigners. While this use of foreigners was seemingly efficient for the moment, it turned out in the long run to be a retarding influence on the development of local skills. The process of industrialization in the least developed countries involves technical decisions and careful research and foreign experts sometimes resist the delegation of such work to local officers with the consequence that the development of local skills is retarded.

Probably the role of the expert in the least developed nations is to strike a balance between (a) doing the work himself and (b) slowly training and allowing the local counterpart to take on an ever increasing measure of responsibility. This compromise can result in an increase of a country's capability to absorb and to better appreciate technical expertise from abroad.

## 6.6 The Framework for Technical Cooperation

There are numerous bilateral, multilateral and private foundation sources of technical cooperation available to countries just starting to industrialise. The main impediment to a wider use of these sources lies in the receiving countries themselves. The countries need to have a policy and administrative framework sufficiently strong to assure potential cooperators that assistance can be effectively utilized.

APPENDIX A

**BIBLIOGRAPHY OF UNITED NATIONS PAPERS REGARDING  
PROGRAMS OF INDUSTRIALIZATION IN  
COUNTRIES AT THE EARLIEST STAGES OF DEVELOPMENT**

(Listed in chronological order of issuance date )

- P-1** International Labour Organisation; Technical Meeting; ADDIS ABABA, 5 - 16 December, 1966; Development of Managerial and Entrepreneurial Resources in Africa; These in precis are conclusions drawn by F. H. Ford from the meeting, and are intended for use on Project UGA-6, Uganda, East Africa; "Development of Managerial Resources in Africa", etc.
- P-2** UNIDO; Interregional Symposium on Technical Services and Facilities for Small-scale Industries, Vedbaek, Denmark, 26 June - 8 July 1967; "Report of the Interregional Symposium on Technical Services and Facilities for Small-scale Industries"; ID/CONF. 2/19, April 9, 1968
- P-3** UNIDO; International Symposium on Industrial Development, Athens, 29 November - 20 December 1967; Provisional agenda item 3 (h), Background Paper "Policies and Programmes for the Establishment of Industrial Estates"; ID/CONF. 1/29, April 27, 1967
- P-4** UNIDO; International Symposium on Industrial Development, Athens, 29 November - December 20, 1967, Provisional Agenda Item 3 (h), "Policies and Programmes for the Development of Small-scale Industry"; ID/CONF. 1/6, April 1967
- P-5** UNIDO; Expert Group Meeting on the Development of Small-scale Industries in Arab Countries of the Middle East; Beirut, Lebanon, 11-15 November 1968; "Report of the Expert Group on the Development of Small-scale Industries in Arab Countries of the Middle East"; ID/WG. 17/19, 15 November 1968
- P-6** UNIDO; Training Workshop on Extension Services for Small-scale Industry in the West African Sub-region, Dakar, Senegal, 25 May - 4 June 1970; in the East African Sub-region, Kampala, Uganda, 8 - 18 June 1970 (tentative); "Services for Small-scale Industry in West Africa"; Survey carried out in the Ivory Coast, Ghana, Nigeria, Dahomey and Senegal from 9 August - 6 September 1969 by Benjamin P. Spiro, Economic and Financial Adviser; ID/WG.53/2, ID/WG.54/2, 23 January 1970
- P-7** UNIDO; Training Workshop on Extension Services for Small-scale Industry; in the West African Sub-region, Dakar, Senegal, 25 May - 4 June 1970; in the East African Sub-region, Kampala, Uganda, 8 - 18 June 1970 (tentative); "The Role of Industrial Estates in the Development of Small-scale Industry in African Countries by Herta J. Karpstein, Industrial Economist; ID/WG.53/4, ID/WG.54/3, 16 March 1970

- P-8 UNIDO; Training Workshop on Extension Services for Small-scale Industry in the West African Sub-region, Dakar, Senegal, 25 May - 4 June 1970; "The Policies of the Government of Niger in regard to Small-scale Industry" by Dankassoua Bako, Chief of Division, Industry Service, Ministry of Foreign Affairs, Niamey, Niger; ID/WG.53/5, 10 April 1970
- P-9 UNIDO; Training Workshop on Extension Services for Small-scale Industry in the East African Sub-region, Kampala, Uganda, 8 - 18 June 1970; "Small-Scale Industries Branch Government of Mauritius" by B. Hazareensing, Officer in Charge, Small-Scale Industries Branch, Port Louis, Mauritius; ID/WG.54/5, 23 April 1970
- P-10 UNIDO; Training Workshop on Extension Services for Small-scale Industry in the East African Sub-region, Kampala, Uganda, 8 - 18 June 1970; "Small-scale Industry and Extension Services in the Sudan" by Abdullah Ahmed Mustafa, Industrial Research Institute, Sudan; ID/WG.54/6, 28 April 1970
- P-11 UNIDO; Training Workshop on Extension Services for Small-scale Industry in the East African Sub-region, Kampala, Uganda, 8 - 18 June 1970; "Report on Small-scale Industries in the Sudan" by Mohamed Mahmoud Ali, Candidate of the Ministry of Industry and Mineral Resources, Sudan; ID/WG.54/7, 28 April 1970
- P-12 UNIDO; Training Workshop on Extension Services for Small-scale Industry in the West African Sub-region, Dakar, Senegal, 25 May - 4 June 1970; "Country Statement, Republic of Ghana" by R. Quist-Arcton, Industries Division, Ministry of Trade Industries and Tourism, Government of the Republic of Ghana, Accra; ID/WG.53/3, 4 May 1970
- P-13 UNIDO; Training Workshop on Extension Services for Small-scale Industry in the West African Sub-region, Dakar (Senegal), 25 May - 4 June 1970; "Industrial Development in Upper Volta", Moumouni Traore, Administrative Assistant to the Industries Board, Ministry of Planning and Public Works, Ouagadougou, Upper Volta; ID/WG.53/6, 6 May 1970
- P-14 UNIDO; Training Workshop on Extension Services for Small-scale Industry in the East African Sub-region, Kampala, Uganda, 8 - 18 June 1970; "Small-scale Industries and Industrial Extension Services in Tanzania", by Wilfred Nerry Nshau, Ministry of Commerce and Industries, Tanzania; ID/WG.54/8, 8 May 1970
- P-15 UNIDO; Training Workshop on Extension Services for Small-scale Industry in the East African Sub-region, Kampala, Uganda, 8 - 18 June 1970; "Development of Small Enterprises in Swaziland" by Ephraim S. F. Magagula, Ministry of Commerce, Industry and Mines, Swaziland; ID/WG.54/10, 14 May 1970

- P-16** UNIDO; Stage de formation sur les services de vulgarisation pour la petite industrie dans la sous-region de l'Afrique occidentale, Dakar, Senegal, 25 mai - 4 juin 1970; "Actions du Gouvernement Togolais pour la Promotion de la Petite Industrie", par J. K. Hadzi, Direction de l'Industrie, Ministère du Commerce, de l'Industrie & du Tourisme; ID/WG.53/9, 21 mai 1970
- P-17** UNIDO; Training Workshop on Extension Services for Small-scale Industry in the West African Sub-region, Dakar, Senegal, 25 May - 4 June 1970; "Sierra Leone's Experience, Plans or Intentions in the Field of Small-scale Industry and Industrial Extension Services", by Mohamed As-Adu Tunis, Small Industries Officer, Ministry of Trade and Industry, Sierra Leone; ID/WG.53/8, 21 May 1970
- P-18** UNIDO; Training Workshop on Extension Services for Small-scale Industry in the East African Sub-region, Kampala, Uganda, 8 - 18 June 1970; "Small-scale Industry, An Account of Tanzania's Experience, Plans and Intentions in the Field of Small-scale Industry and Extension Services" by S. A. Malai, Industrial Studies and Development Centre, Tanzania; ID/WG.54/11, 29 May 1970
- P-19** Centre for Entrepreneurship & Management, Addis Ababa, Ethiopia; "Policies and Programmes of Industrial Development in Ethiopia" by Eshetu Indeshaw; May, 1970
- P-20** UNIDO; Office de Promotion de l'Entreprise Ivoirienne; "Stage de formation sur les services de vulgarisation pour la petite industrie dans la sous-region de l'Afrique Occidentale"; "La Promotion de la Petite Industrie en Cote - d'Ivoire", Par C. Vouzon; Dakar (Senegal), 25 Mai - 4 Juin 1970
- P-21** UNIDO; Training Workshop on Extension Services for Small-scale Industry in the East African Sub-region, Kampala, Uganda, 8 - 18 June 1970; "Problems, Experience and Plans in the Development of Small-scale Industries and Industrial Extension Services in Uganda", by E.J. Mwendha, Consultant, Small Industries Management at the Management Training and Advisory Centre and B. W. Latigo, Industrial Officer, Ministry of Commerce & Industry; ID/WG.54/12, 8 June 1970
- P-22** UNIDO; Training Workshop on Extension Services for Small-scale Industry in the East African subregion, Kampala, Uganda, 8 - 18 June 1970; "The Development of Small Enterprises in Rural Zambia" by Jon J. Barnham, Rucon Industries Limited (a member of INDECO); ID/WG.54/14, 12 June 1970

APPENDIX B

BIBLIOGRAPHY OF MONOGRAPHIC MATERIAL  
REGARDING SMALL INDUSTRY AND ECONOMIC DEVELOPMENT

The following bibliography lists monographic material not included in the UN-sponsored documents shown in Appendix A above. This bibliography contains only monographs used as background in preparing the foregoing report.

Publications below are designated by the symbol, "M" for monograph, to distinguish these documents from the papers designated by the symbol, "P", and listed in the previous Appendix.

- M-1 ADELMAN, I. and MORRIS, O.T., Society, Politics and Economic Development: A Quantitative Approach, John Hopkins Press, Baltimore, 1967
- M-2 BOWN, G. K., "The Place of Small Scale Industry in the Industrial Framework", Annex I to UNIDO Document for International Symposium on Industrial Development, Athens, 29 Nov. - 20 Dec., 1967, Provisional Agenda Item 3 (h), entitled, "Policies and Programmes for the Development of Small Scale Industry", Document ID/CONF 1/6, April 1967. (Note: This paper contains in Annex III a bibliography of United Nations Articles, publications and reports on small scale industry; the bibliography is organized by subject matter as follows: Development of Small Scale Industry, Technical Services and Facilities for Small Scale Industry, Industrial Estates, Financing, Inter-relations between large and Small Industries, Management, Size of Plant.)
- M-3 BREDO, W., Small Industries Estates -- Tool for Industrialization, Stanford Research Institute, Glencoe, Illinois, 1960
- M-4 CHENERY, H.B., "Patterns of Industrial Growth", American Economic Review, Vol. 50, Sept. 1960 (p. 624-634).
- M-5 DAVENPORT, R., Development Financing for Modern Small Enterprises, Stanford Research Institute, McGraw-Hill Book Company, New York, 1966
- M-6 DUNCAN, P., Industry. The Economic Potential of West Cameroon, 1965, (unpublished).
- M-7 EAST PAKISTAN SMALL INDUSTRIES CORPORATION, Proposal for Financing Small Industry, submitted to the IBRD, Dacca, East Pakistan, May 1969 (unpublished)
- M-8 GLOECKNER, P.H., Industrial Estates, an Instrument for Industrial Development and Promotion, Ferossens, Ltd., Lahore, Pakistan, 1966

- M-9 HIRSCHMAN, A.O., The Strategy of Economic Development, Yale University Press, New Haven, Conn., 1958
- M-10 KINDELERGER, C.P., Economic Development, McGraw-Hill Book Co., Inc., 1958
- M-11 KUZNETS, Simon, "Quantitative Aspects of Economic Growth of Nations", Economic Development and Cultural Change, Vol. V, October, 1955, pp. 5 - 94.
- M-12 LEWIS, W. A., The Theory of Economic Growth, Richard D. Irwin, Inc., Homewood, Illinois, 1955
- M-13 MYRDAL, G., Economic Theory and the Underdeveloped Regions, Gerald Duckworth, London, 1957
- M-14 NANJUNDAN, S; ROBISON, N.E.; STALEY, E, Economic Research for Small Industry Development, Asia Publishing House, Bombay, 1962
- M-15 BANIS, G. and FEI, J.C.H., "A Theory of Economic Development", American Economic Review, Volume 51, September 1961, pp. 533-65
- M-16 ROBINSON, H. J., International Private Investment: A Guide to Prospective Preparation, Stanford Research Institute, Menlo Park, California, January 1960
- M-17 ROBISON, H.E. and TURNER, F.L., Consulting Report for Ford Foundation, Review of Program for the Northern States of Nigeria (etc), September 1968 (unpublished)
- M-18 ROSENSTEIN-RODAN, P.M., "International Aid for Underdeveloped Countries" Review of Economics and Statistics, Volume 43, May 1961, p. 107-38
- M-19 HOBSON, W. W., Process of Economic Growth, Revised Ed., W. W. Norton & Co., 55 5th Avenue, New York City 10003, 1962
- M-20 STALEY E., and MORSE R., Modern Small Industry for Developing Countries, McGraw-Hill Book Co., reprinted by Kagakusha Co., Ltd., Tokyo, 1965
- M-21 TURNER, F.L., The Artisan Community in Ecuador's Modernising Economy, Stanford Research Institute, 1965 (unpublished)

- M-22 TURNER, F. L., The General Report, Volume I of The Economic Potential of West Cameroon -- Priorities for Development, Stanford Research Institute, Menlo Park, California, June 1965 (unpublished)
- M-23 UNIDO, Les Domaines Industriels en Europe et au Moyen-Orient, United Nations, New York, 1969
- M-24 UNIDO, Small Scale Industry in Latin America, United Nations, New York, 1969



APPENDIX C

GUIDES FOR MACHINERY SELECTION AND FOR OBTAINING PRICES

The purpose of this appendix is to list sources of information useful in selecting and determining prices for machinery for small industry.

In the writer's experience there is a key question to be raised by a loan program administrator when assessing an application for an industrial project:

Does the applicant have a firm offer or quotation for machinery?

Without clearly specified machinery and a quoted c. and f. price, feasibility analysis of the project cannot proceed.

The cost of machinery is needed to determine the total project cost, the amount to be loaned, the borrowers' equity, and the cost of the plant buildings. The specifications and performance of machinery are needed to predict the output of the proposed plant and its profitability. To obtain this cost and performance data, a firm offer or quotation is needed on specific machinery from a supplier. (See above Appendix C, Sample Document C-1, paragraph 5 "Quotations on Foreign Equipment and Machinery"; Sample Document C-2, paragraph 4-vii; Sample Document C-3, paragraph 1 "Cost of the Project"; and Sample Document C-4, paragraph 5 "Plant Requirements".)

The exporters of machinery are often disinterested in small volume orders originating from countries where there is little or no record of prior sales, only limited maintenance skills, often no agent, and where uncertainties exist about letter of credit procedures.

For the above reasons, loan applicants in developing countries have problems obtaining a firm quotation on imported machinery. An industrial advisory service in a developing country can help loan applicants obtain quotations. Likewise the embassies and consulates of supplying countries and the head offices of financing institutions (e.g. Kredit Anstalt, IDA, the USAID) can also help. However even these well-intentioned organizations become impatient if loan applicants in developing countries 'can't even state what they want.'

The best help in selecting machinery and obtaining firm quotations, usually comes from a local community of indentors or manufacturer's representatives in any major port city or national capital. As a small industry development program gains momentum and financing continues year after year, this community of agents will grow in numbers, in engineering competence, and in their capability to supply a wider variety of machinery. At first, however, it may be necessary to assist the agents and to inform them on how to go about ordering the

equipment needed for small industry. Various machinery guides are mentioned below in this appendix to assist in strengthening the capability of manufacturers' agents and to assist loan applicants in obtaining machinery quotations in localities where there may be no agent.

The correct selection of machinery, given the most complete data, often entails engineering advice. Sometimes such advice is available from manufacturers' agents. Almost always, however, engineering information needs to be checked by a production engineer who is generally familiar with the production methods or processes involved. Such an engineer should know such facts as the required horsepower of equipment, the types of raw material, the need for industrial water, electrical power and fuel. Instinctively such an advisor also knows if maintenance problems for a given type of machinery are within or outside the scope of local engineering skills.

It is hoped that the machinery guides listed below in this appendix will offer at least a starting point for obtaining information needed to select and to obtain costs of machinery for small industry projects.

Often in writing to the suppliers listed in these guides, it is useful to provide a copy of letters to the commercial section of local embassies or consulates representing the country in which the supplier is located. In the case of European or Japanese suppliers, the official representatives will often assist by urging the supplier to exert his best efforts in furnishing detailed specifications and machinery prices.

The fact remains that suppliers are often disinterested in sales opportunities where the sales volume is likely to be small and the payment procedures are not well known. Therefore any special encouragement from an official source or from a contact in the supplying country will help to elicit better responses from companies listed in the following guides.

(See following page for machinery guides)

MACHINERY GUIDES

<u>Guide No.</u>	<u>Country where Listed Suppliers are Located</u>	<u>Title, Address of Guide, and Languages Used</u>	<u>Price of Guide</u>	<u>Annotation</u>
-1	Denmark	<u>Export Directory of Denmark</u> , Krak Legat, Nytorv, DK 1450, Copenhagen K, or the Ministry of Commerce, Government of Denmark, Copenhagen (English, French, German, Spanish)	n.a. (No charge through official channels)	Issued annually; lists 7800 products and 3200 companies; includes engineering and consulting firms who erect plants.
-2	France	<u>Kompas, Part I, Fabrications and Part II, Firms</u> , L'Annuaire Industriel, 22, Rue Franklin Roosevelt, 75, Paris 8eme, France (In Spanish, German, English and French)	n.a. (No charge through official channels)	Issued annually in two volumes, listing products alphabetically with the names and addresses of suppliers.
-3	Germany, West	<u>Who Makes Machinery</u> , Association of German Machinery Manufacturers, D 6000, Frankfurt (Main), West Germany (English, but other language editions are available also)	Can be obtained at no charge through Consulates and Embassies.	Issued annually, contains an alphabetical listing of machinery by type and product line, and contains listing of suppliers of complete manufacturing plants (Section 38). Suppliers addresses are shown.
-4	Japan	<u>How to Start Smaller Industries, SERISS, 1, 2 and 3, Japan</u> Consulting Institute, Nishiya Park Building, 1-1, Yuraku-Che, Chiyoda-ku, Tokyo, Japan (English)	no charge	Issued continuously since 1968. The Japan Consulting Institute has offices in Thailand, Philippines, Indonesia, India, East and West Pakistan, Iran, UAR, Tanzania, Peru and other localities where information on machinery suppliers is furnished. The guide mentioned here is unique among the guides discussed in this report in the sense that it offers specification

Guide No.	Country where Listed Suppliers are Located	Title, Address of Guide, and Languages Used	Price of Guide	Annotation
(Continued from previous page)				
G-5	Netherlands	<u>Capital Goods from Holland</u> , The Netherlands Government Information Service, The Hague, Netherlands (In English, Spanish, French, German)	n.a. (but usually furnished without charge through embassies or consulates.)	<p>and costs for complete plants. Series No. 1 contains specifications on 22 plant types of plants; Series 2, on 24 plants, Series No. 3 on a further 24 types of plants. These are "model schemes" or "plant profiles". The names of suppliers can be furnished, but specific information is needed by the Japan Consulting Institute; references to the Series No. by page and title will expedite service.</p> <p>Issued annually, contains alphabetical listing of about 800 machinery products with names of and addresses of suppliers and capitalization, employees, banks teletype numbers etc. (A companion publication entitled <u>Metalectro</u>, contains similar information but on non-machinery products we well.)</p>
G-6	Sweden	<u>Swedish Export Directory</u> , General Export Association of Sweden, Storgatan 19, P.O. Box 5513, S-11485, Stockholm, Sweden (Swedish, French, Spanish, German, English)	\$10 or 84	<p>Issued annually, lists about 5000 products and 1600 companies listed by types of machinery they offer. (Sections 82 through 85)</p>

<u>Guide No.</u>	<u>Country where Listed Suppliers are located</u>	<u>Title, Address of Guide, and Languages Used</u>	<u>Price of Guide</u>	<u>Annotation</u>
G-7 1	United Kingdom	<u>Machinery Buyers' Guide</u> , Machinery Publishing Co., Ltd., Clifton House, 83-117, Euston Road, London N.W. 1, U.K. (In French, German, Russian, Spanish, English)	25 Shillings including postage	Issued annually, contains an alphabetical listing of machinery products with the names and addresses of suppliers.
G-8	United States	<u>MacRae's Blue Book Corporate Index, Industry's Directory and Catalog File</u> , 903 Burling Ave., Western Springs, Illinois 60558, U.S.A. (English)	\$38.15	The <u>Blue Book</u> is issued annually in 4 volumes and takes up about 19 x 21 x 28 cm. of space. The Machinery section is in Volume 3 and consists of 121 pages listing about 1300 different types of machinery in alphabetical order together with the names and addresses of over 10,000 suppliers in the U.S. The relative size of each supplier and his trade names can be checked by a cross reference to Volume I. There are also lists of general machinery dealers and dealers of reconditioned machinery. Has limited section on complete plants, p.995, Volume 3.
G-9	United States	<u>Thomas Register</u> Thomas Publishing Co., 461, 8th Avenue, New York City, N.Y. 10001	\$60.00 (within the U.S.)	Issued annually in 8 volumes, takes up about 35 x 22 x 80 cm. of space, contains a section on machinery listing some 12,000 suppliers. By cross referencing, the capitalization of suppliers can be determined. Copies of the <u>Thomas Register</u> are usually on file in U.S. Embassy or Consulate commercial sections.

Note: Similar guides are available for machinery from Spain, USSR, Czechoslovakia and probably other supplying countries.

There is a specialized catalog of labor intensive machinery available from Japan for \$10.00 air mail postage included, from CECOCO, P.O. Box 8, Ibaraki City, Osaka Prefecture. The book is entitled, "Providing the World with More Food and Employment."

## APPENDIX D

ISIC CLASSIFICATION OF INDUSTRY <sup>b/</sup>

<u>Light industry</u>		<u>Metal products industry</u>		<u>Heavy industry</u>	
<u>ISIC<sup>a/</sup> No.</u>	<u>Industry group</u>	<u>ISIC No.</u>	<u>Industry group</u>	<u>ISIC No.</u>	<u>Industry group</u>
20-22	Food, beverages	35	Metal products	27	Paper and paper products
23	Textiles	36	Machinery except electrical	31	Chemicals and chemical products
24	Footwear, clothing	37	Electrical machinery	32	Petroleum and coal products
25	Wood and cork	38	Transport equipment	34	Basic metal industries
26	Furniture				
28	Printing and publishing				
29	Leather and leather products				
30	Rubber products				
39	Miscellaneous manufacturing				

<sup>a/</sup> International Statistical Industrial Classification

<sup>b/</sup> Source: ID/CONF. 1/6, April 1967, "Policies and Programmes for the Development of Small-scale Industry"

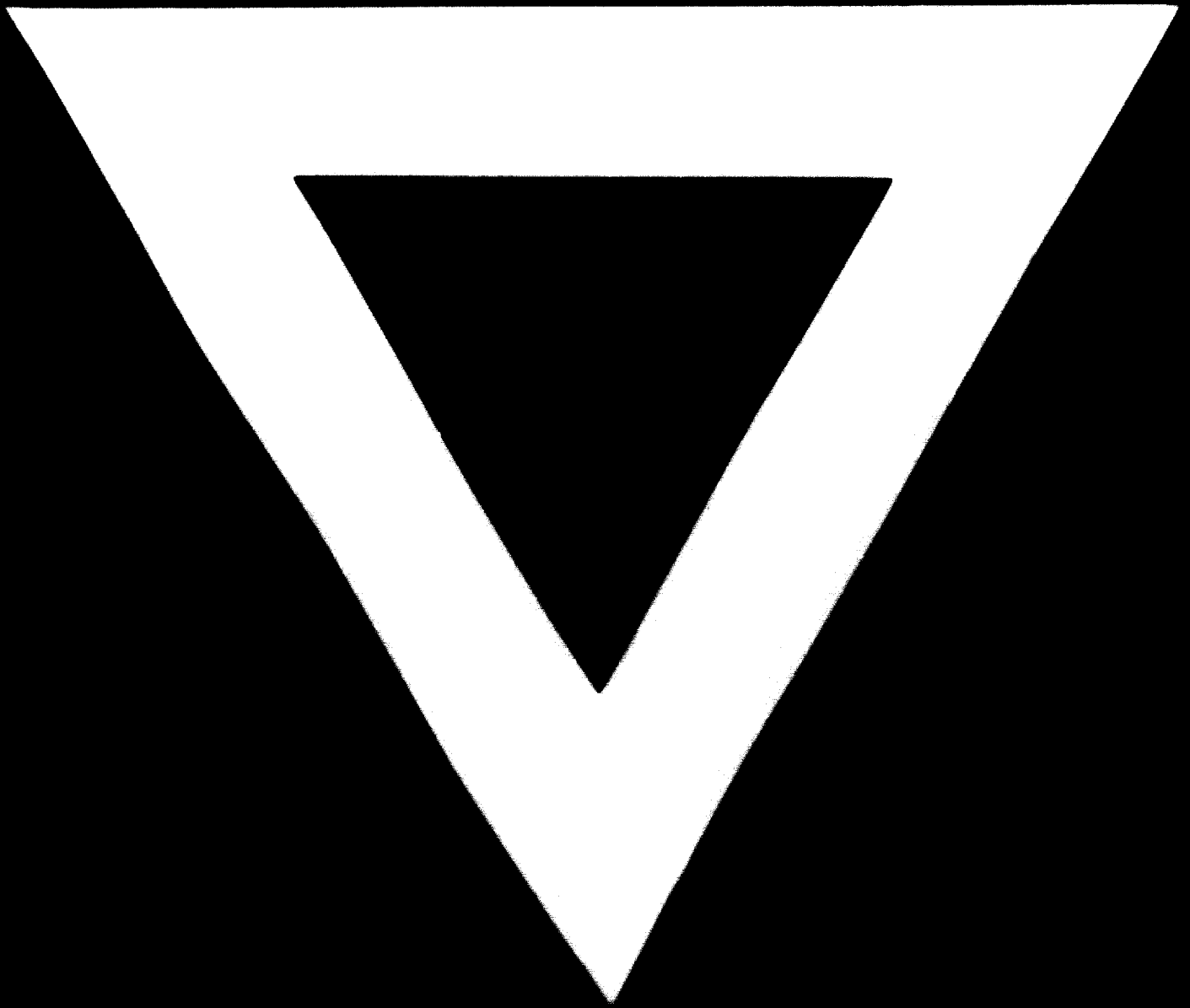
APPENDIX E

**TYPES OF PRODUCTION SUITABLE FOR SMALL-SCALE INDUSTRIES**

Products that may be economically manufactured by small-scale industries include the five principal types as follows:

- (a) Dispersed processing of weight-losing or perishable raw materials. Opportunities depend on the resources, geography, transport network and land ownership patterns of the country or area. Examples of such industries are rice milling, rice bran oil, saw mills, wood drying kilns, vegetable oil extraction, cheese, butter, leather tanning, fruit and vegetable canning, hardboard and strawboard.
- (b) Bulky, weight-gaining and hence market-oriented products, principally in the field of construction, agricultural and household goods. Examples are agricultural implements, sheet metal products, containers, mixed fertilizers, bricks, concrete products, structural metal products, plastic pipe and conduit, bread, soft drinks, ice cream, furniture and truck and bus bodies.
- (c) Simple assembly, mixing or finishing operations. Productions require low investment, have moderate economies of scale, are labour-intensive and have low transfer costs. Examples are: food products, clothing, footwear, leather goods, pharmaceuticals, paints and varnishes, sports goods, plastic products and toys. These are particularly suitable for establishment in urban centres enjoying external economies.
- (d) Service industries lending themselves to quality job work and specialized tasks. Examples are: tool and die making, electroplating, printing, electrical servicing, auto servicing, foundries and machine shops.
- (e) Separable manufacturing operations in the metal-working industries. These offer potentially the greatest scope for small enterprises. The versatility of machine tool operations, the endless number of products and components to be made, and the interchangeability of standard parts offer great opportunities for craftsmen and engineers to adapt and innovate constantly in response to changing cost and production possibilities.

Source: E. Staley and R. Morse, Modern Small Industry for Developing Countries, Chapter VI, McGraw Hill, New York (1965)



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